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SurfBeam® 2
Satellite Modem
Outdoor Unit (ODU)

Installation Guide

ViaSat Document Number

1104460

(Rev. 001)

SM2 Software Release 1.0 and higher

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REGULATORY COMPLIANCE and NOTICES

FCC Notice

This device complies with part 15 of the FCC Rules. Operation is subjected to the following two conditions:
1. This device may not cause harmful interference, and
2. This device must accept any interference received, including interference that may cause undesired operation.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

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-- Increase the separation between the equipment and receiver.
-- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
-- Consult the dealer or an experienced radio/TV technician for help.

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Revision History

Revision	Rationale	Release Date	Affected
001	Initial Release	23 Feb., 2011	All pages

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Warnings, Cautions, and Notes

Safety precautions or important information found in this document will normally be presented just before the point where the hazard is likely to be encountered. Symbols used to identify the information are defined as follows:

Warning This symbol indicates a procedure or practice that, if not correctly followed, could result in injury, death, or long term health hazard.

Caution This symbol indicates a procedure or practices that, if not correctly followed, could result in equipment damage, or destruction.

This symbol indicates a procedure or practices that, if not correctly followed, could result in serious equipment damage, or destruction, or could be life threatening.

This symbol indicates that a radiation source may be present and care should be taken to follow all safety advisories.

This symbol indicates that a hot surface may be present and care should be taken to follow all safety advisories.

Note This symbol indicates information that is important to observe.

Important Safety Precautions and Notices

Warnings.

Assembling dish antennas on windy days can be dangerous. The antenna surface, even in slight winds, creates strong forces. For example, a 1.0m antenna facing a wind of 32km/h (20 mph) can undergo forces of 269 N (60 lbs). Be prepared to handle those forces safely at unexpected moments. Do not attempt to assemble, move, or mount a dish on high wind days or serious, even fatal, accidents may occur. The Vendor is not responsible or liable for damage or injury resulting from antenna installations.

Danger

Antennas improperly installed or installed to an inadequate structure are very susceptive to wind damage. This damage can be very serious or even life threatening. The owner and installer assume full responsibility that the installation is structurally sound to support all loads (weight, wind and ice) and properly sealed against leaks. The Vendor is not responsible for any damage caused by an antenna due to installations that do not follow this instruction.

WATCH OUT FOR WIRES! Installation of this product near power lines is dangerous. For your own safety, follow these important safety rules.

1. ***Perform as many functions as possible on the ground.***
2. ***Watch out for overhead power lines. Check the distance to the power lines before starting installation. We recommend you stay a minimum of 6 meters (20 feet) from all power lines.***
3. ***Do not install the antenna or mount assembly on a windy day.***
4. ***If you start to drop the antenna or mount assembly, get away from it and let it fall.***
5. ***If any part of the antenna or mount assembly comes into contact with a power line, call your local power company. DO NOT TRY TO REMOVE IT YOURSELF! They will remove it safely.***
6. ***Properly ground the antenna assembly according to all federal and local electrically codes.***

Cautions.

This instruction will assist you in the correct installation of the product. Read it prior to starting any installation work. Due to the nature of the method of manufacture, there may be sharp edges on metal components. Be cautious when un-packing and handling antenna parts.

Radiation Caution

When this antenna is connected to a transceiver (TRIA), and powered on through interconnection to a satellite modem, a radiation source can be present. The transmitter will turn on only once a proper receive signal is obtained. Caution must be used upon completion of alignment to the satellite, and once the installation of the system has been completed. When the transmitter is operational, keep away a distance of 60 cm (2 feet). For additional information, contact your service provider.

HOT SURFACE

When this antenna is powered on, the transceiver (TRIA) can get hot can be present burn danger to skin. Caution must be used upon turning power on the system. Do not touch the transceiver (TRIA).

Notes

This product was qualified under test conditions that included the use of the supplied cable between system components. To be in compliance with regulations, the user must use this cable and install it properly.

Different types of cord sets may be used for connections to the main supply circuit. Use only a main line cord that complies with all applicable product safety requirements of the country of use.

Installation of this product must be in accordance with national wiring codes.

*ViaSat, Inc. declares that this Satellite Modem is **cULus Listed** and is in compliance with Canadian and U.S. safety standards and complies with the RoHS directive for hazardous materials reduction.*

ViaSat, Inc. declares that this Satellite Modem is in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC.

About This Manual

This manual contains installation and configuration information about the SurfBeam 2 Satellite Modem Outdoor Unit (ODU).

For information on installation and configuration of the SurfBeam 2 Satellite Modem Indoor Unit (IDU) refer to the SurfBeam 2 Satellite Modem Indoor Unit (IDU) Installation and Setup Guide, 1104467-001.

Obtaining Additional Publications and Information

Additional publications and information including user guides, white papers, application notes, release notes, SNMP MIB downloads, software updates, training schedules, and other technical information may be found on the ViaSat Customer Portal web site. The Customer Portal may be accessed through the ViaSat web site located at this URL:

http://viasat.com/

Customers may apply for password access to the Customer Portal by clicking on the Customer Login link and following the link to create a new account.

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1 ANTENNA ASSEMBLY – GENERAL INFORMATION

1.1 Tools and Hardware Required

Antenna Installation will require the use of the following tools.

- Ratchet driver
- No 2 Pozi-drive / Philips screw driver
- 13 mm (or ½") socket
- 13 mm (or 1/2") open-ended spanner wrench
- 8 mm (or 5/16th) socket
- 8 mm (or 5/16") open-ended spanner wrench

Additional Materials:

- Weather grade silicon sealant
- Approved RG6 Cable
- UV rated cable ties

Package Contents:

To avoid potential damage, the Eutelsat Tooway Ka antenna should remain in its protective packaging until it is required for installation.

Note: Never rest the dish on its edge as shown in Figure 1-1.

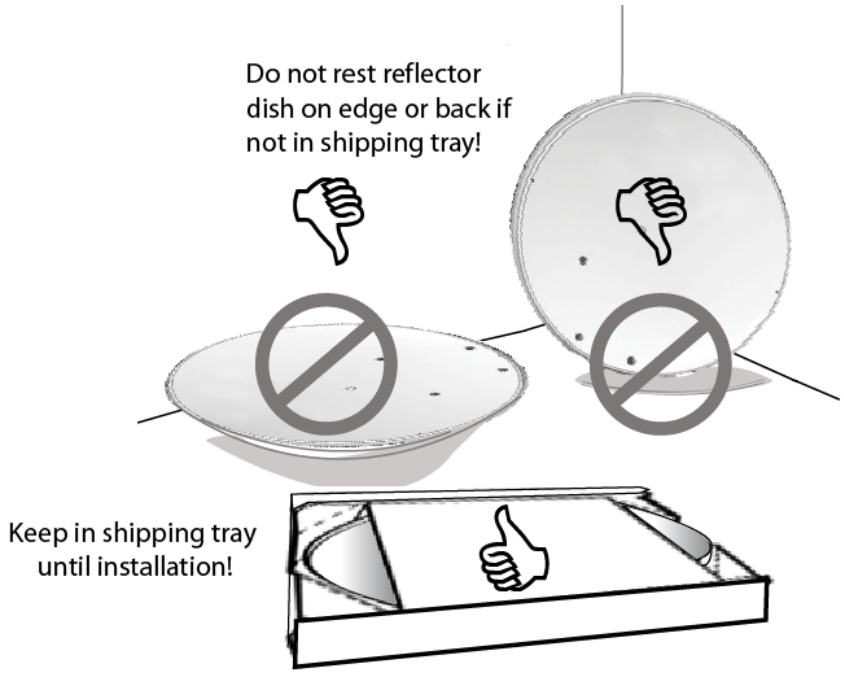
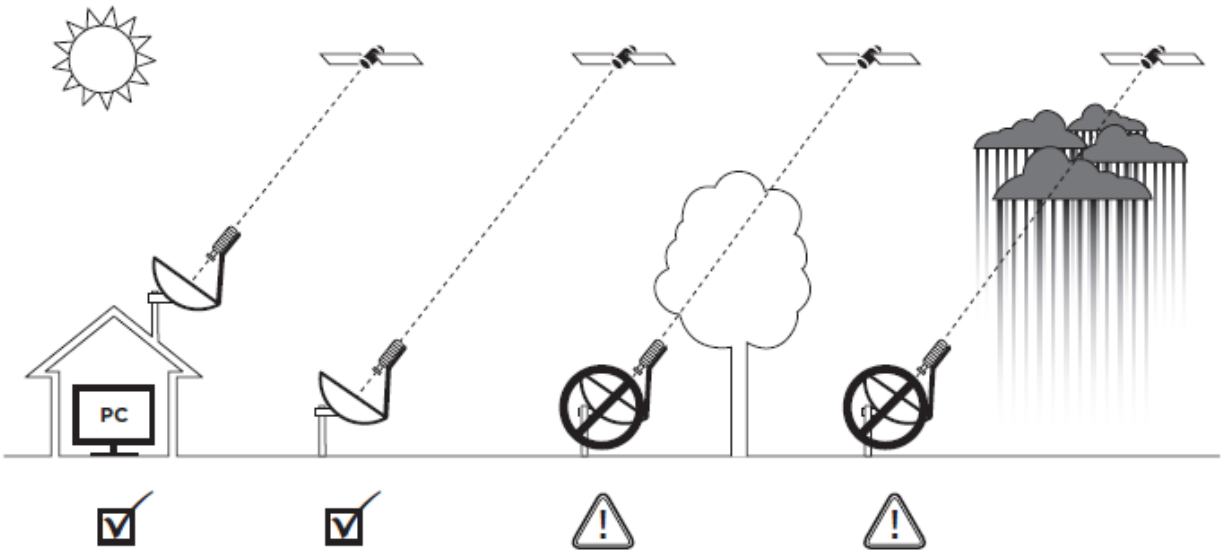


Figure 1-1. Never Rest Dish on its Edge

Suggested Installation Environment



Note: *Do not install antenna in a location where the line of sight to the satellite is blocked by trees or tall buildings. Attempting fine pointing during periods of dense cloud cover with precipitation may not be successful.*

Table 1-1 through Table 1-3 list components required for antenna assembly. Figure 1-2 through Figure 1-5 depict the hardware lists required for antenna assembly.

Table 1-1. Reflector Assembly Box

Number	Description	Qty
1	Reflector	1
2	Antenna Back Bracket	1
3	Skew Plate	1
4	Boom Arm	2
5	TRIA Mounting Bracket	1
6	M8 Spring Washer	8
7	M8 Washer	12
8	M5 Spring Washer	4
9	M8 x 20 mm Carriage Bolt	9
10	M8 Nut	8
11	M8 Serrated Nut	9
12	M8 x 20 mm Hex Head Bolt	4
13	M8 x 45 mm Carriage Bolt	4
14	M5 Pozi Pan Screw	4

Table 1-2. Inner Az/EI Box (mid pole)

Number	Description	Qty
15	Elevation Bracket	1
16	U-shaped Pole Clamp Bolt	2
17	Pole Clamp Bar	2
18	Flange Nuts	4
19	M5 x 25mm Hex Head Bolt	1
20	M5 Tooth Lock Washer	1
21	M5 Hex Nut	1
22	Grounding Wire	1

Table 1-3. Main Outer Box

Number	Description	Qty
23	TRIA Assembly	1

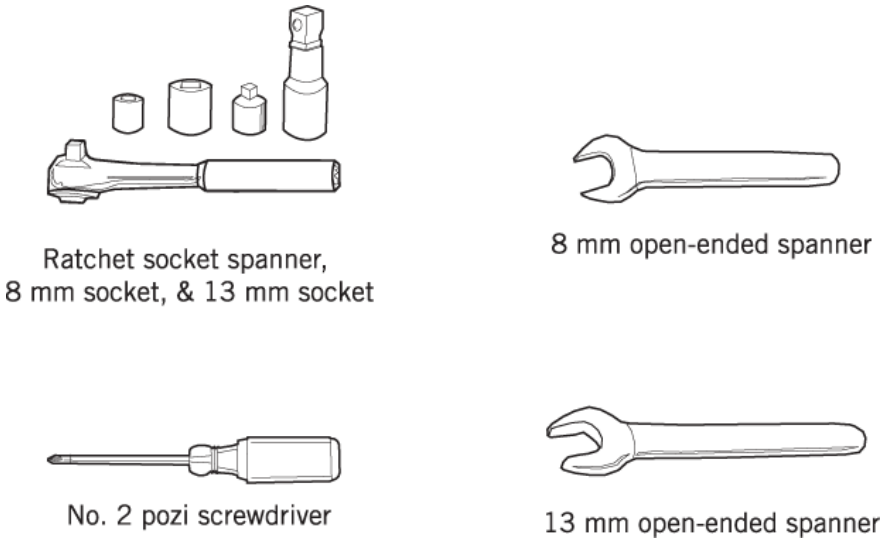


Figure 1-2. Tools and Additional Materials

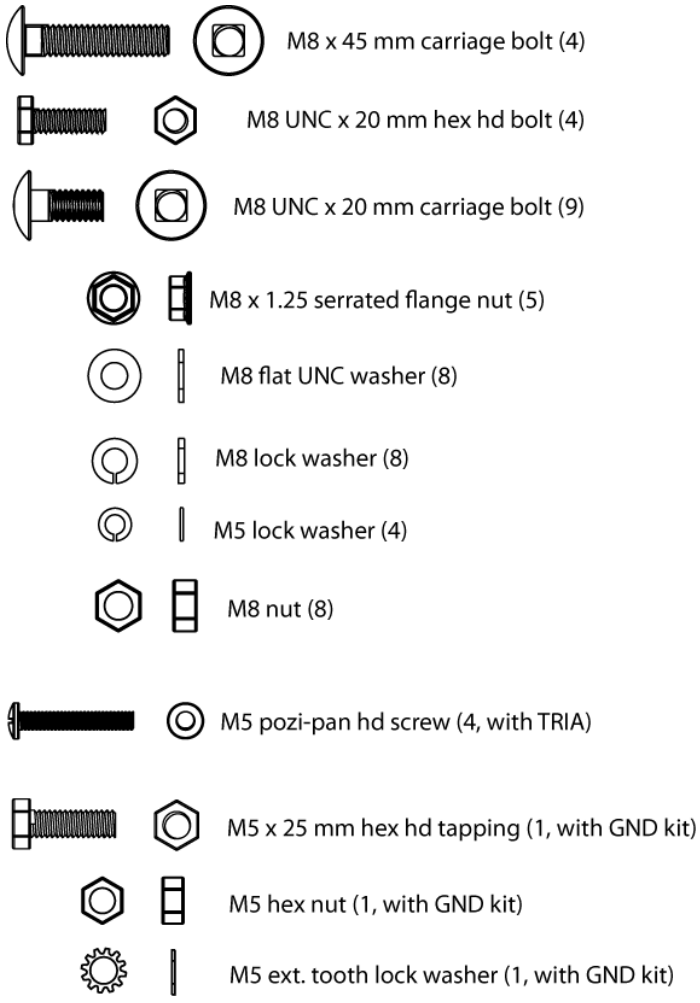

M8 x 45 mm carriage bolt (4)
M8 UNC x 20 mm hex hd bolt (4)
M8 UNC x 20 mm carriage bolt (9)
M8 x 1.25 serrated flange nut (5)
M8 flat UNC washer (8)
M8 lock washer (8)
M5 lock washer (4)
M8 nut (8)
M5 pozi-pan hd screw (4, with TRIA)
M5 x 25 mm hex hd tapping (1, with GND kit)
M5 hex nut (1, with GND kit)
M5 ext. tooth lock washer (1, with GND kit)

Figure 1-3. Fasteners (1 of 3) Top Pole

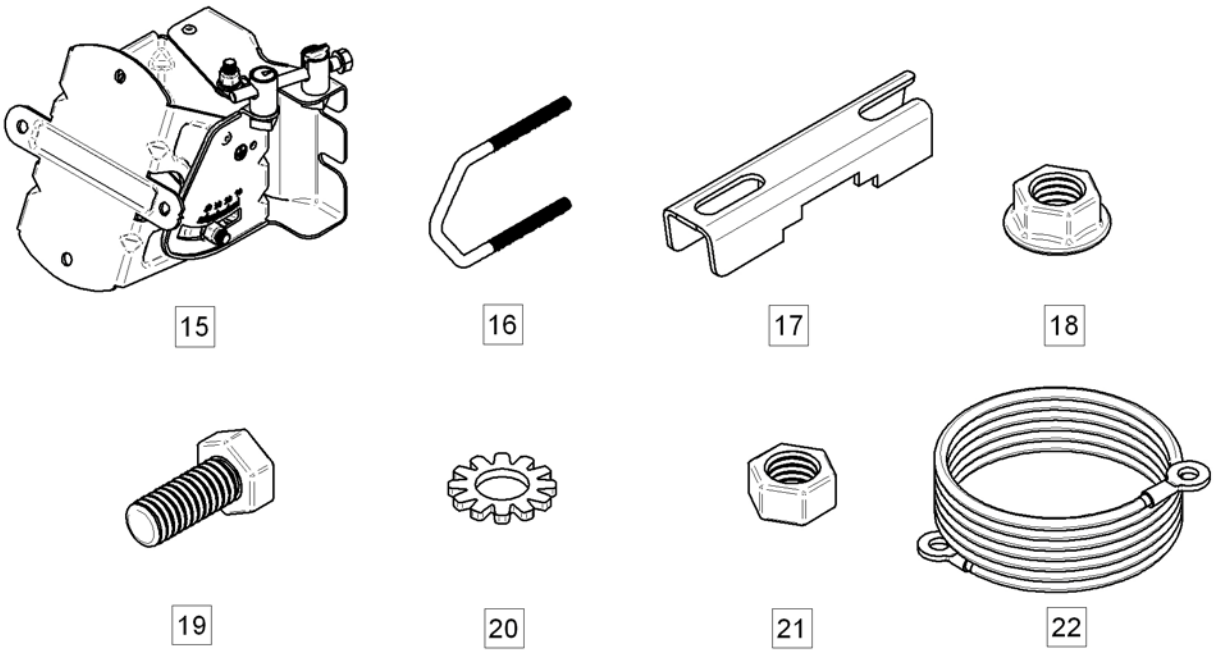


Figure 1-4. Mid Pole ODU Az/El Box Components (2 of 3)

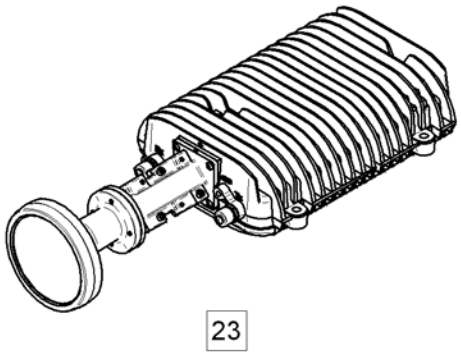


Figure 1-5. TRIA (3 of 3)

There are two versions of ODU elevation bracket, one mounts in the middle of a support pole, the other mounts on the top of a pole or a tri mast assembly. The assembly of these two ODU versions is covered separately on the following pages.

2 ASSEMBLING A MID POLE ODU

The mid pole ODU has clamps that allow it to be mounted on a pole.

2.1 Unpacking the Antenna

Remove the antenna dish and set it aside while still in its protective shipping material. Do not remove the dish until ready to install it.

Caution Do not rest the dish on its side or lay it flat if removed from shipping material!

2.2 Antenna Assembly

Complete the antenna assembly on the ground, before mounting it on the Mounting pole. This assembly has seven steps.

Step 1: Adjustments for Antenna Assembly

At this point the elevation setting should be pre-set as per the Work Order# to the approximate value. In order to do this, ensure the elevation lock down nuts are loosened, and then manually adjust the elevation setting to the relevant position.

When the coarse elevation adjustment is complete, tighten the elevation lock down nuts. This will secure the setting while the antenna is assembled.

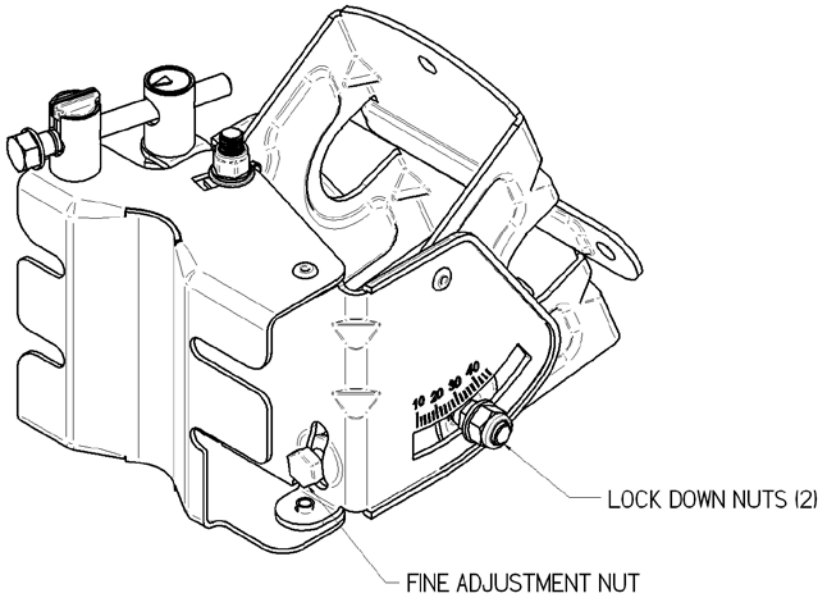


Figure 2-1. Initial Adjustments for Antenna Assembly

Step 2: Fasten Antenna Back Bracket to Elevation Plate

Construct the Elevation, Azimuth, and Skew Adjustment Assembly by fastening the Skew Plate to the front of the Elevation Bracket, through the Antenna Back Bracket.

Ensure that you align the A arrows. Pass four M8 x 20mm Carriage Bolts through the skew plate, then the Antenna Back Bracket, and, finally, through the front of the Elevation Bracket. Secure the Skew Plate using a M8 Washer, M8 Spring Washer, and a M8 Hex Nut on each Carriage Bolt, as in (Figure 2-2).

Set the skew to 90 degrees, as shown in Figure 2-3. Tighten hardware with a 13mm (or 1/2") wrench.

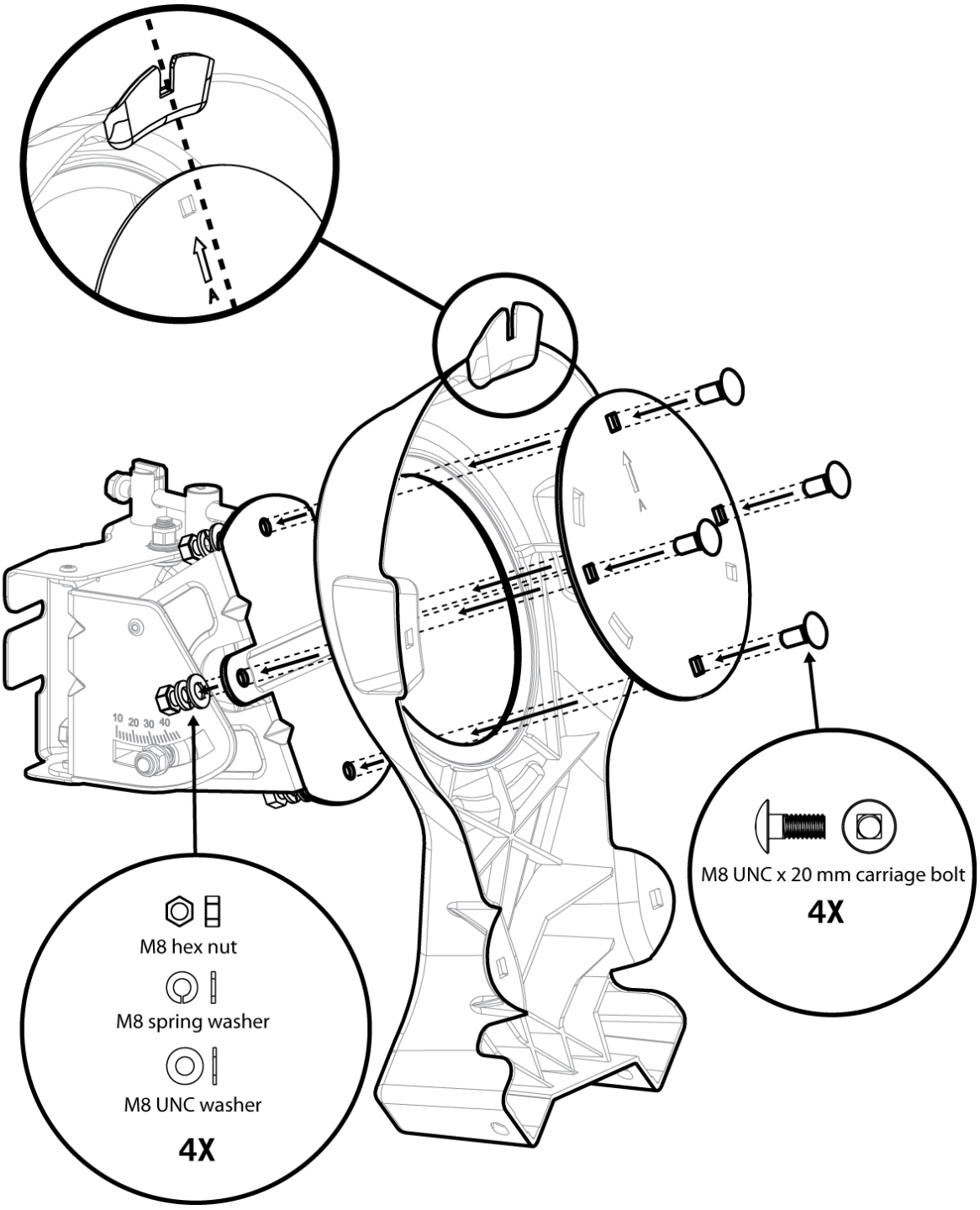


Figure 2-2. Elevation Bracket Assembly

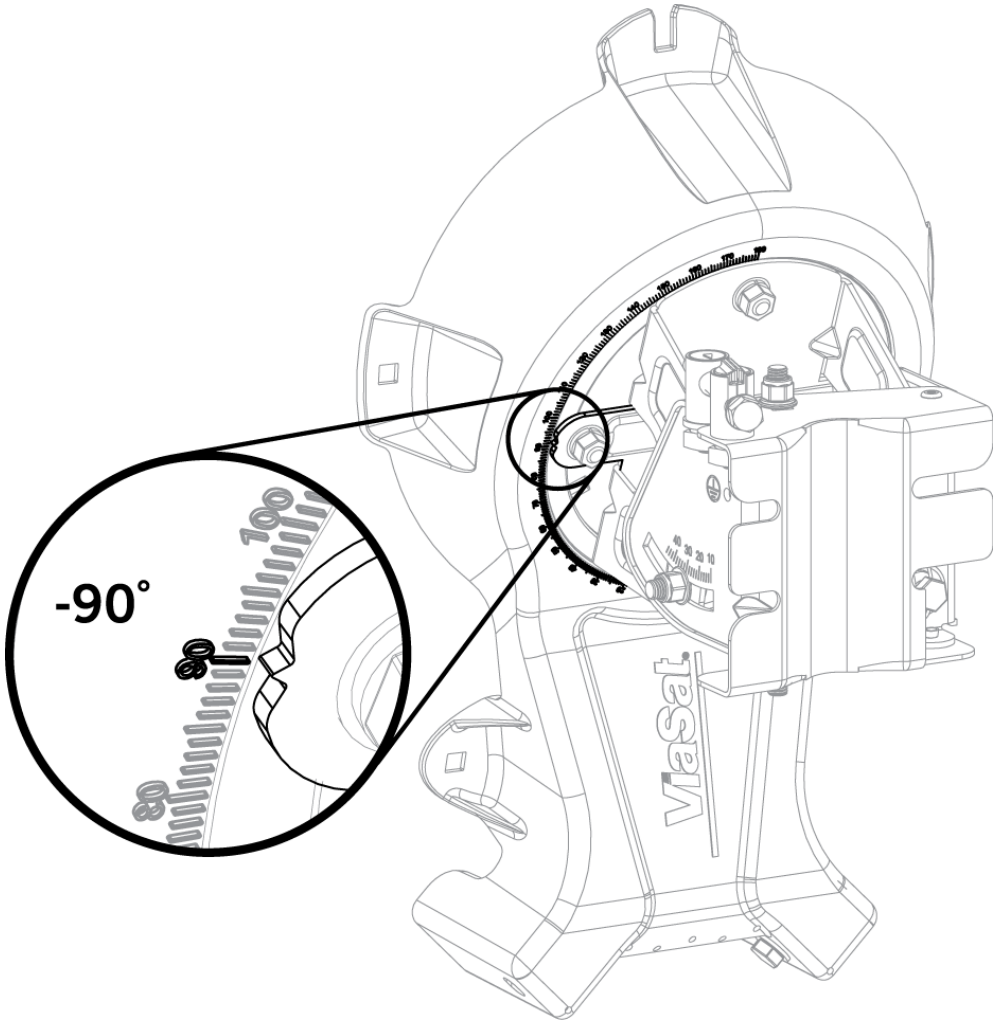


Figure 2-3. Setting the Skew

Step 3: Boom Arm & TRIA Support Bracket Installation

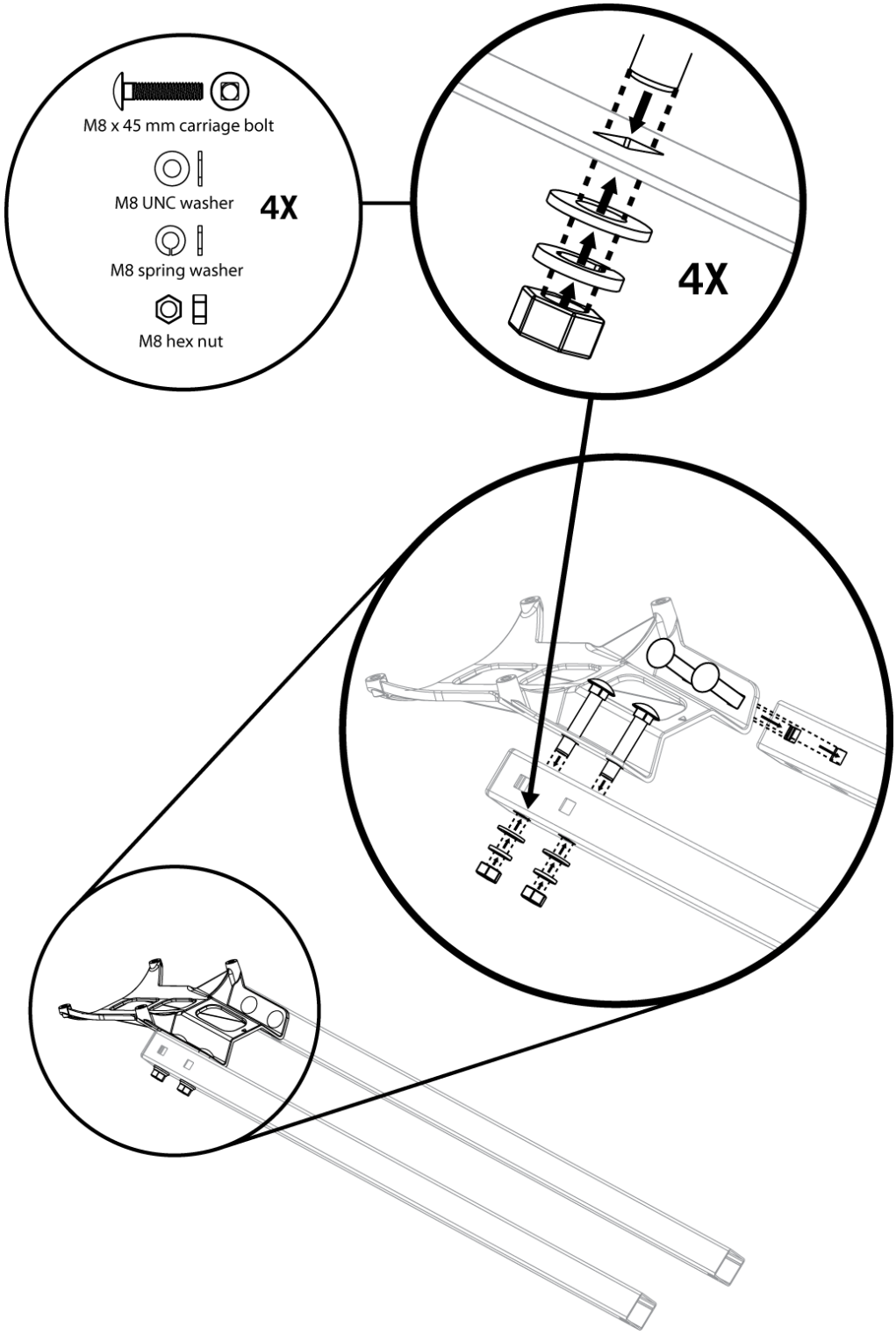


Figure 2-4. Assembly of Boom Arms

Position the TRIA Support Bracket onto the ends of the Boom Arms, aligning the screw holes. To fasten the TRIA Support Bracket onto the ends of the Boom Arms, insert one M8 x 45mm Carriage Bolt into each of the four square-holes in the TRIA Support Bracket, making sure that the square shoulders on the bolt are seated in the square hole. Install one M8 Washer, One M8 Spring Washer and one M8 Nut onto each M8 Bolt and tighten with a 13mm (or 1/2") wrench (Figure 2-5).

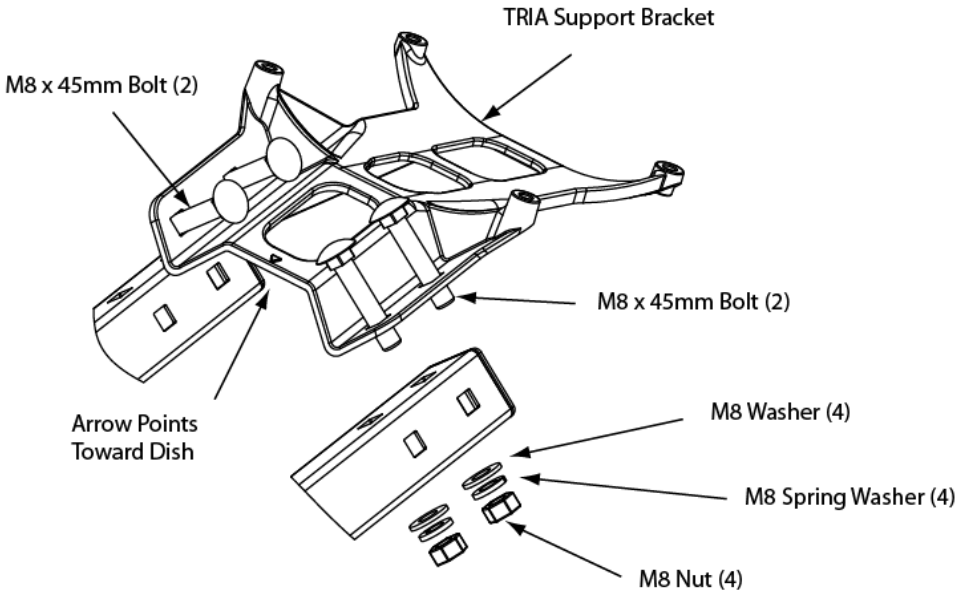


Figure 2-5. Assembly of TRIA Support Bracket

Step 4: TRIA Installation

Start by removing the TRIA and the mounting hardware kit from its box (Figure 2-6). Position the TRIA onto the four mounting posts on the TRIA mounting bracket (Figure 2-7).

Note: The TRIA is positioned on the incorrect side if the TRIA cooling fins come into contact with the TRIA Mounting Bracket.

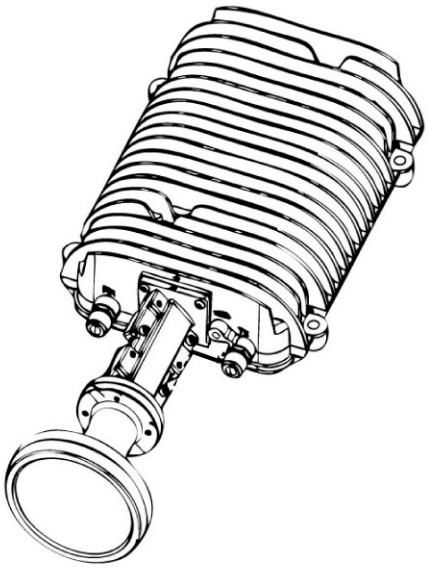


Figure 2-6. The TRIA Assembly

Insert the four M5 Pozi-Pan Screws and M5 Spring Washers (included with the TRIA, not the ODU fasteners) into the TRIA mounting holes and thread into the TRIA Mounting Bracket (Figure 2-7). Tighten each screw using a number 2 Pozi-drive or Phillips screw driver.

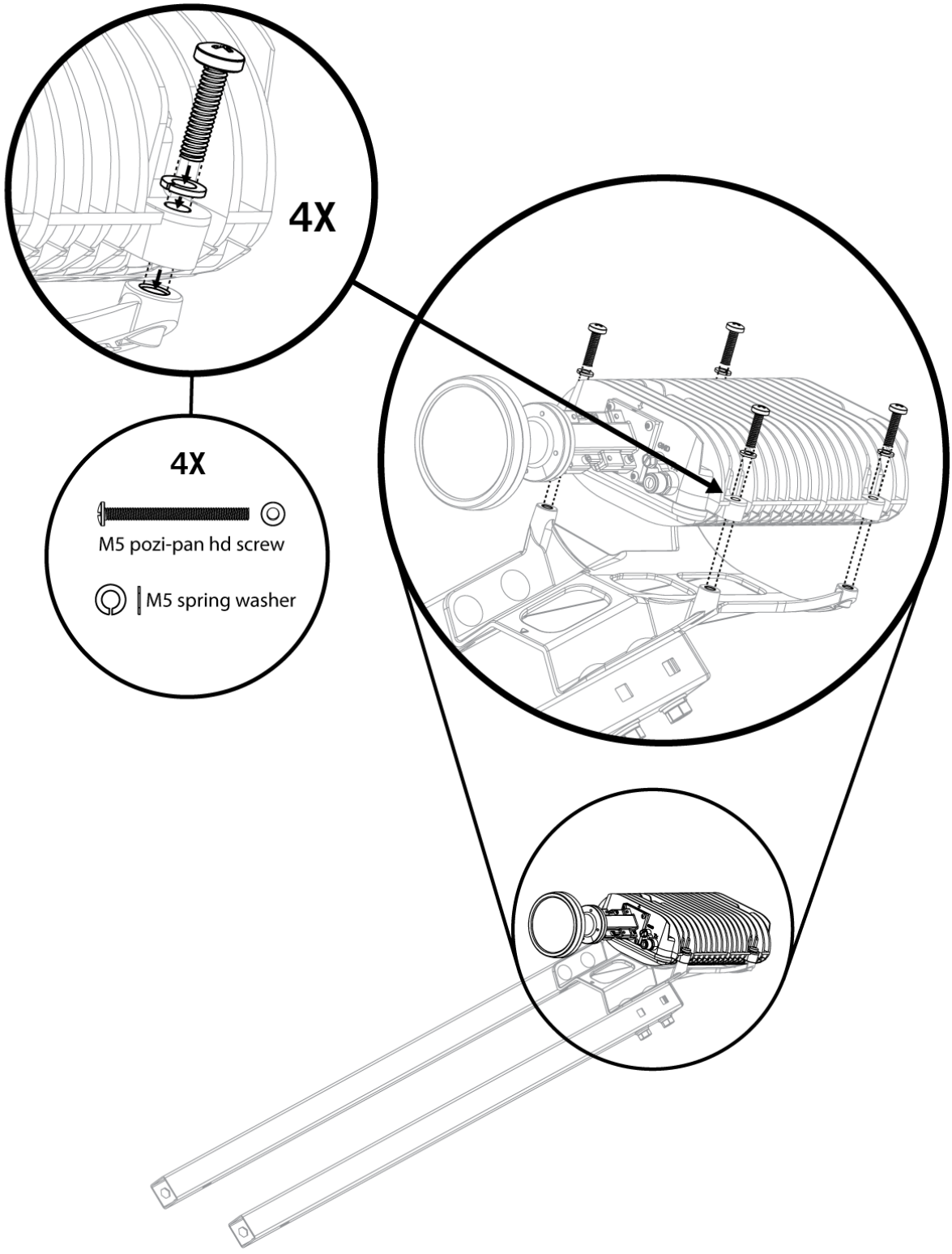


Figure 2-7. Mounting of TRIA Assembly.

Now run the ground wire from the TRIA connection marked GND to the ground lug (Figure 2-8) on the Elevation Plate (Figure 2-9) along the boom arm. Wrap the ground wire and boom arm with UV resistant cable ties, as shown in Figure 2-9.

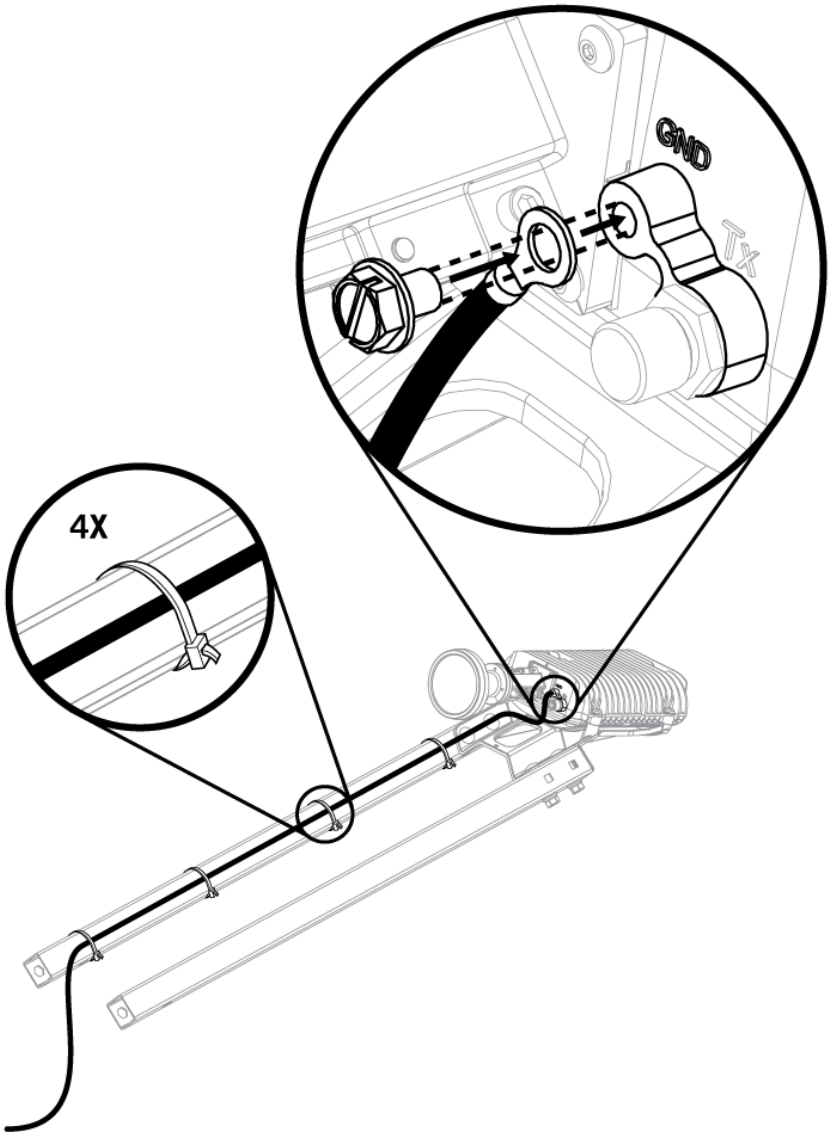


Figure 2-8. Attaching Ground Wire to TRIA.

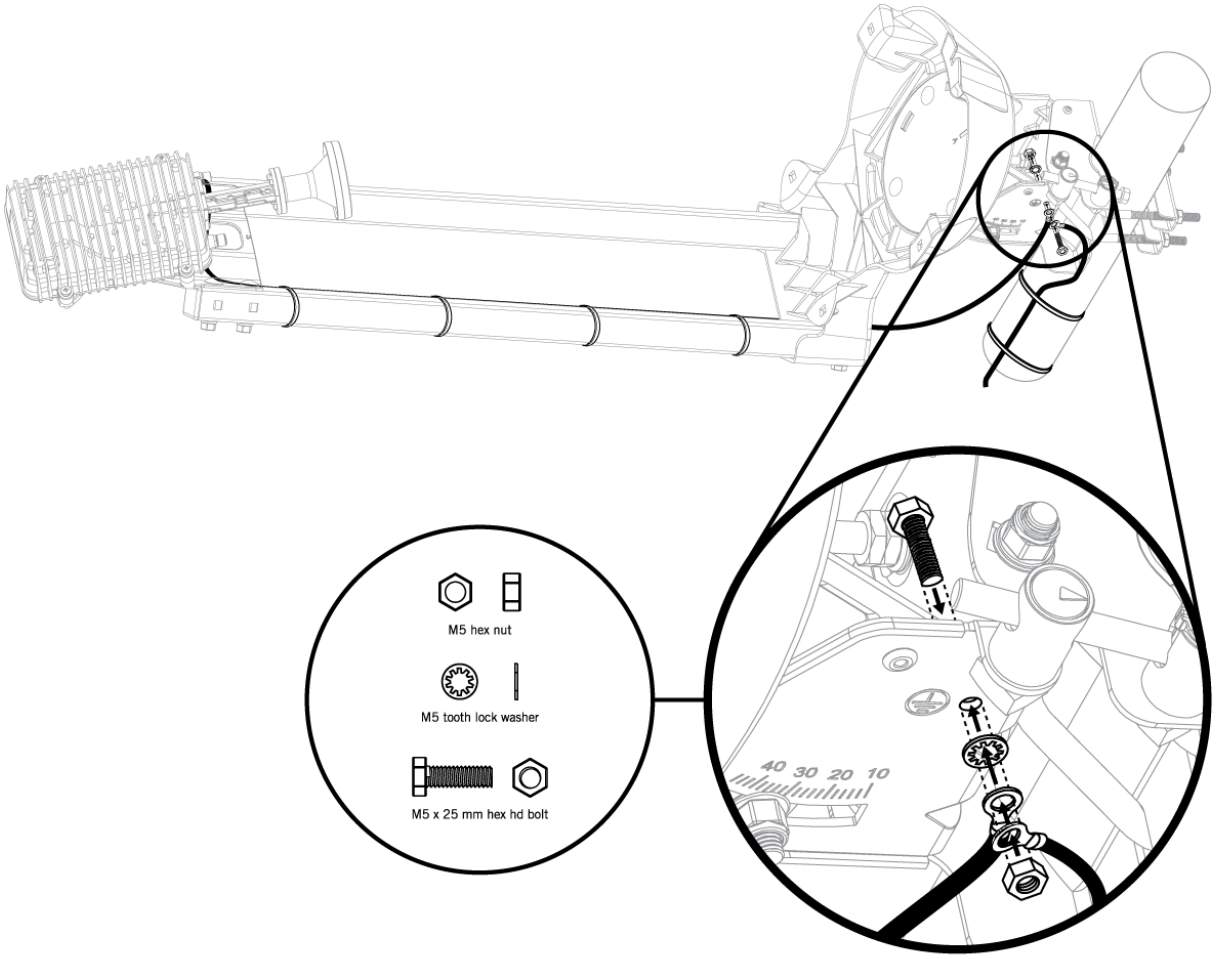


Figure 2-9. Attaching the Ground Wire to Boom Arm and Azimuth/Elevation Plate.

Step 5: Pole Clamp Hardware Installation

Position each M8 U-Bolt through the Elevation Assembly as shown in Figure 2-10. Position the closed-hole end of the Pole Clamps onto the M8 U-Bolts, allowing the open-slot end of the Pole Clamps to hang loose. Install the four M8 Serrated Nuts onto the M8 U-Bolts, threading the Nuts only until the U-Bolt threads protrude through the nut.

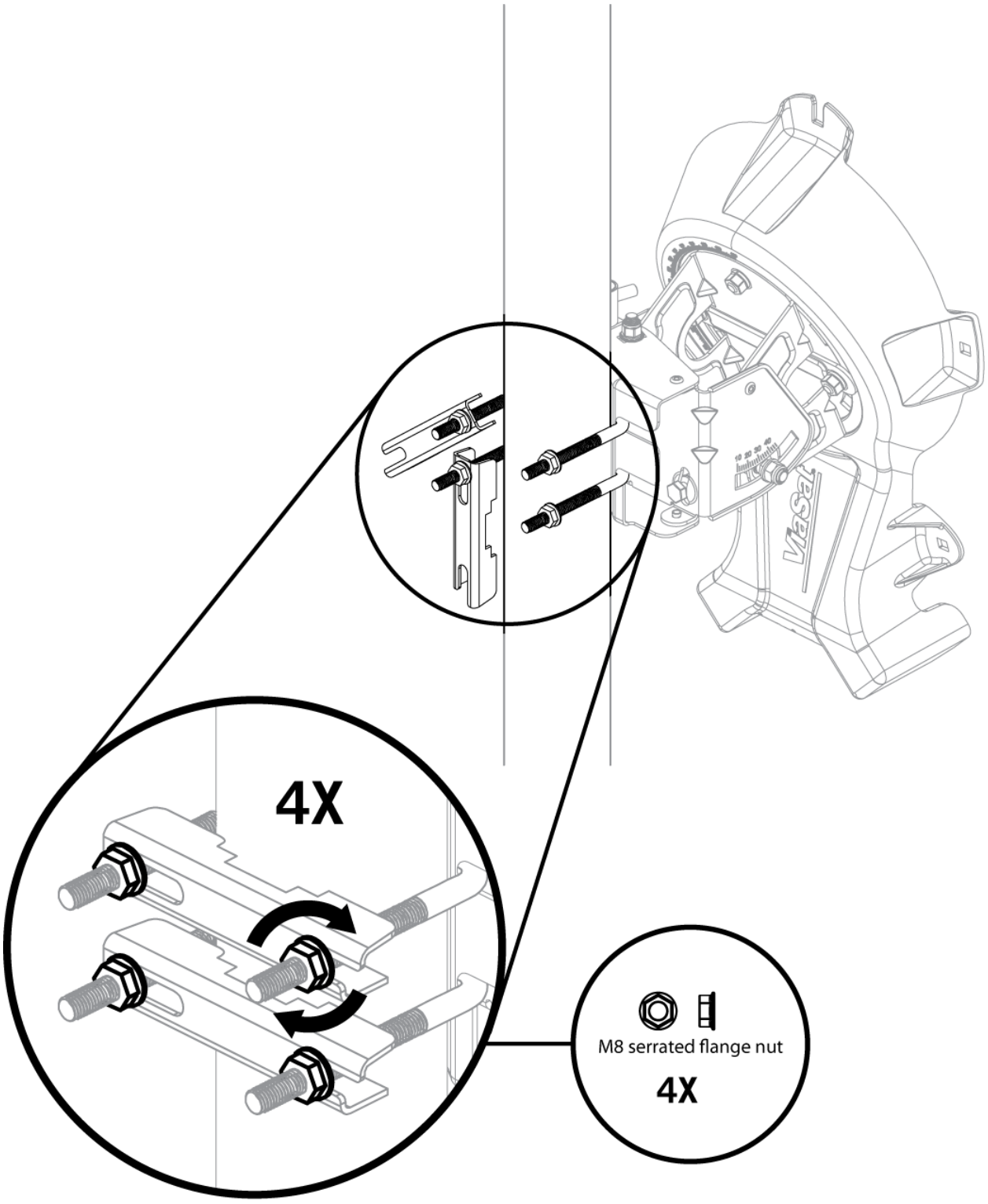


Figure 2-10. Clamping ODU Assembly to Pole

Step 6: Install Antenna onto Suitable Pole

With the antenna dish not yet installed, position the Antenna onto a suitable Pole as shown in Figure 2-10. Rotate each Pole Clamp to engage the slotted end of the Clamp with the other side of the U-Bolt as shown in Figure 2-10.

Hand-tighten each of the four M8 Serrated Nuts to bring the two Pole Clamps into contact with the Pole (as shown in Figure 2-11), then tighten the four nuts with a 13mm (or 1/2") wrench.

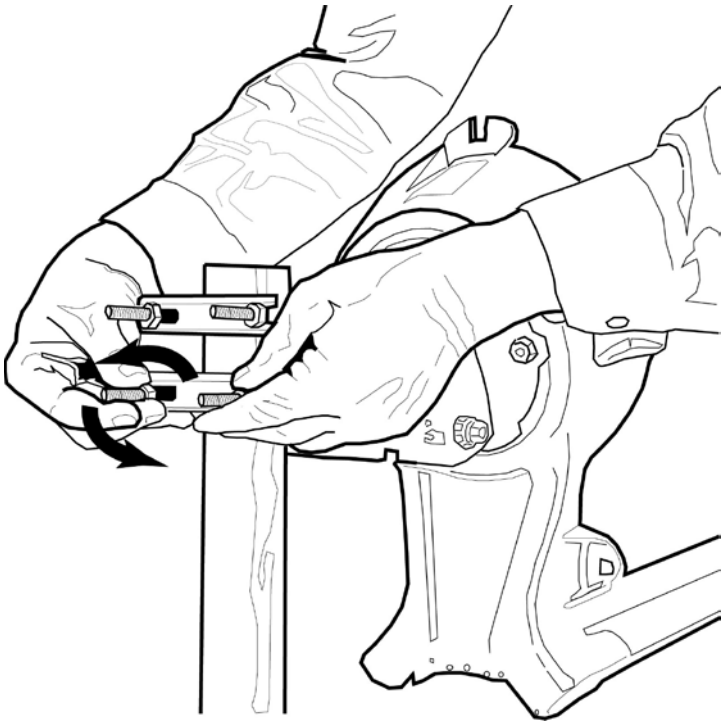


Figure 2-11. Tightening the Clamps.

Step 7: Attaching the Boom Arms

Slide the Boom Arms into the slots at the bottom of the Antenna Back Bracket, aligning the screw holes. To fasten the Boom arm to the Antenna Back Bracket, insert one M8 x 20mm Hex Head Bolt through one M8 Washer and into each of the four screw holes in the slot and tighten with a 13mm (or 1/2") wrench (Figure 2-4).

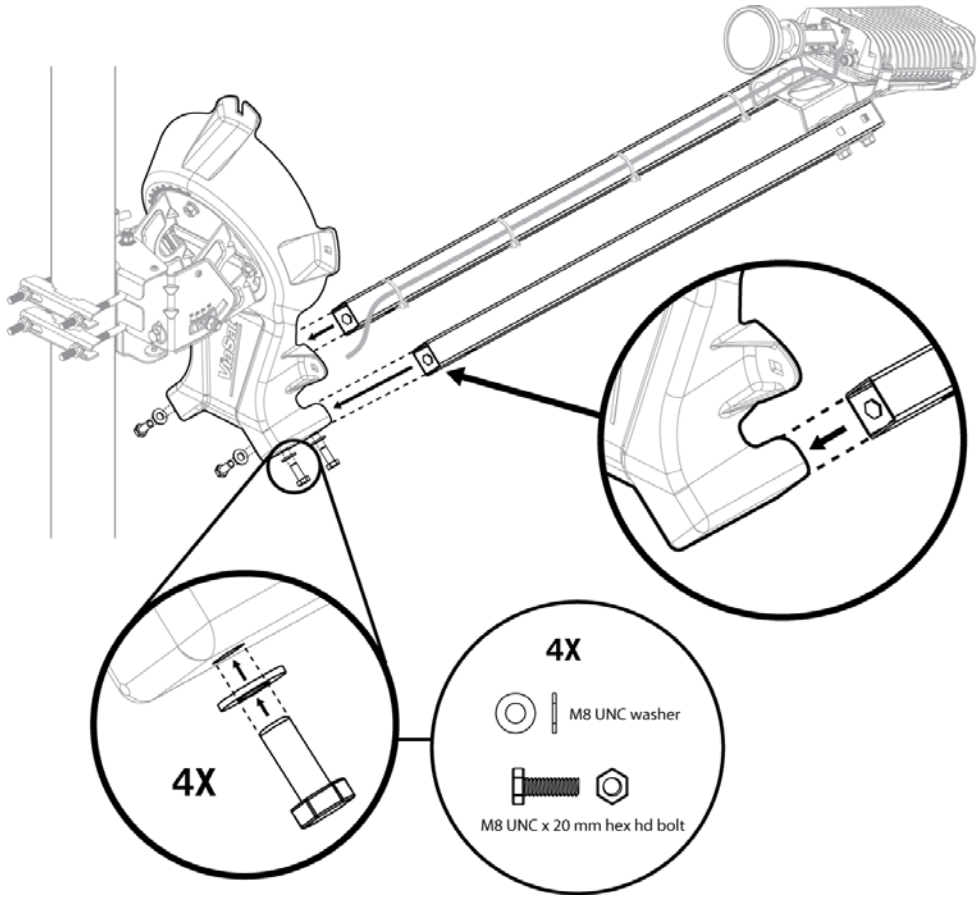


Figure 2-12 Mounting the Boom Arms.

Step 8: Elliptical Dish Installation

Fasten the Elliptical Dish to Antenna Back Bracket using five M8 x 20mm Carriage Bolts inserted through the front of the Dish and through the five tabs located on the rim of the Antenna Back Bracket. First, support the dish using a M8 x 20mm carriage bolt that has been fastened in the upper hole of the dish (Figure Figure 2-13). Let the slot in the antenna back bracket support the weight of the dish. Then insert the rest of the carriage bolts and secure them with serrated nuts. Make sure that the square shoulders on the carriage bolts are seated in the square holes in the Dish. Secure the Dish to the Antenna Back Bracket using a M8 Serrated Flange Nut on each carriage bolt and tighten with a 13mm (or 1/2") wrench (Figure 2-14).

***Note**: Depending on installation situation, receiver dish might be attached prior to clamping to pole, or afterwards.*

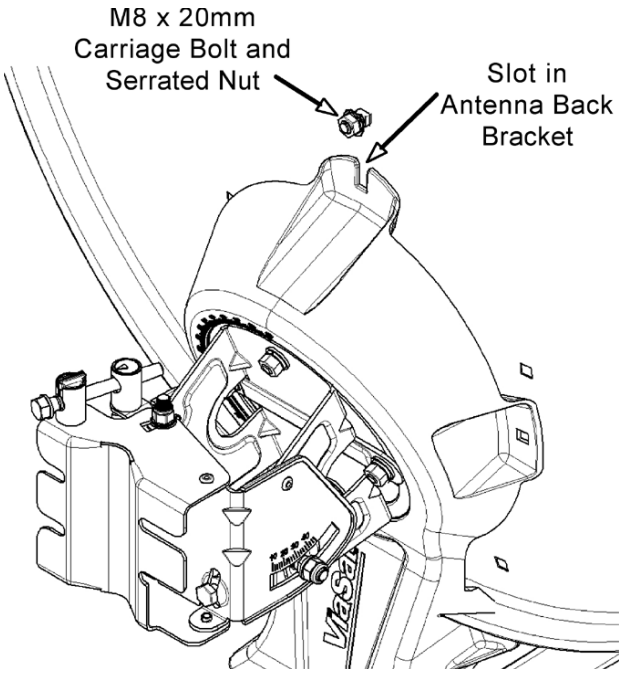


Figure 2-13. Initial Mounting of Receiver Dish (1)

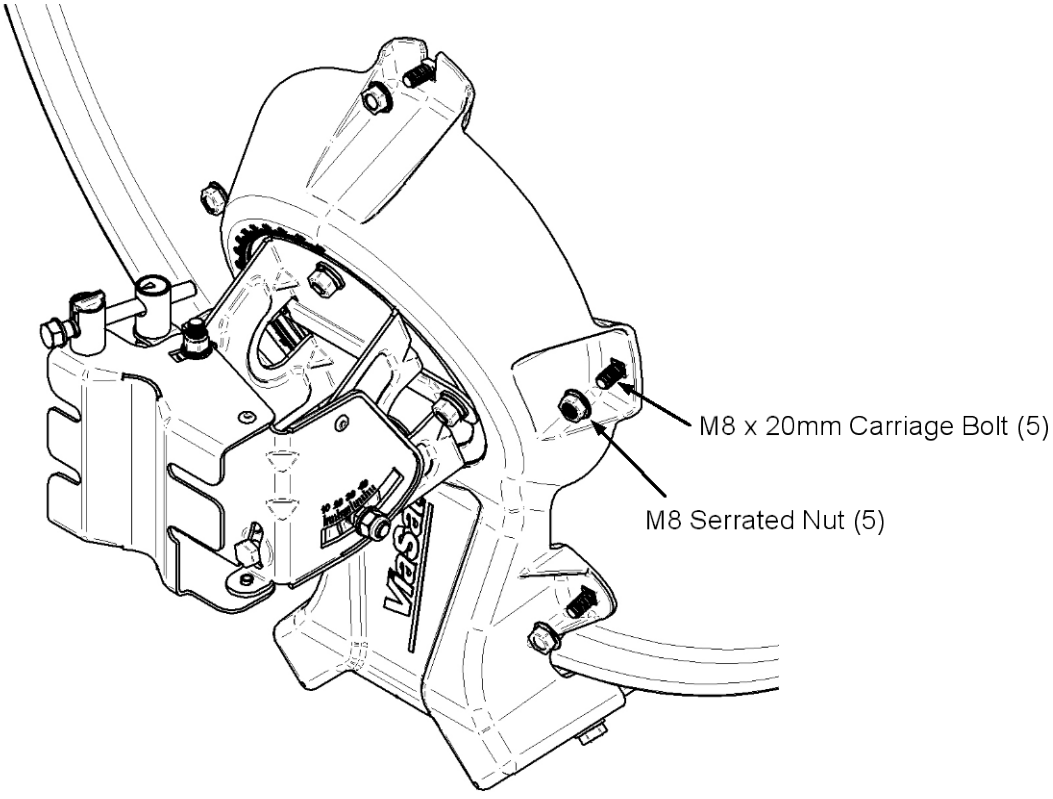


Figure 2-14. Mounting of Receiver Dish (2)

3 ASSEMBLING A TOP POLE ODU

The top pole ODU has an elevation bracket that allows it to be mounted on the top of a pole or a tri mast assembly. Figure 3-1 shows the hardware included with a top pole ODU assembly.

3.1 Unpacking the Antenna

Remove the antenna dish and set it aside while still in its protective shipping material. Do not remove the dish until ready to install it.

Caution Do not rest the dish on its side or lay it flat if removed from shipping material!

3.2 Antenna Assembly

Complete the antenna assembly on the ground, before mounting it on the Mounting pole. This assembly has seven steps.

Step 1: Adjustments for Antenna Assembly

At this point the elevation setting should be pre-set as per the Work Order# to the approximate value. In order to do this, ensure the elevation lock down nuts are loosened, and then manually adjust the elevation setting to the relevant position.

When the coarse elevation adjustment is complete, tighten the elevation lock down nuts. This will secure the setting while the antenna is assembled.

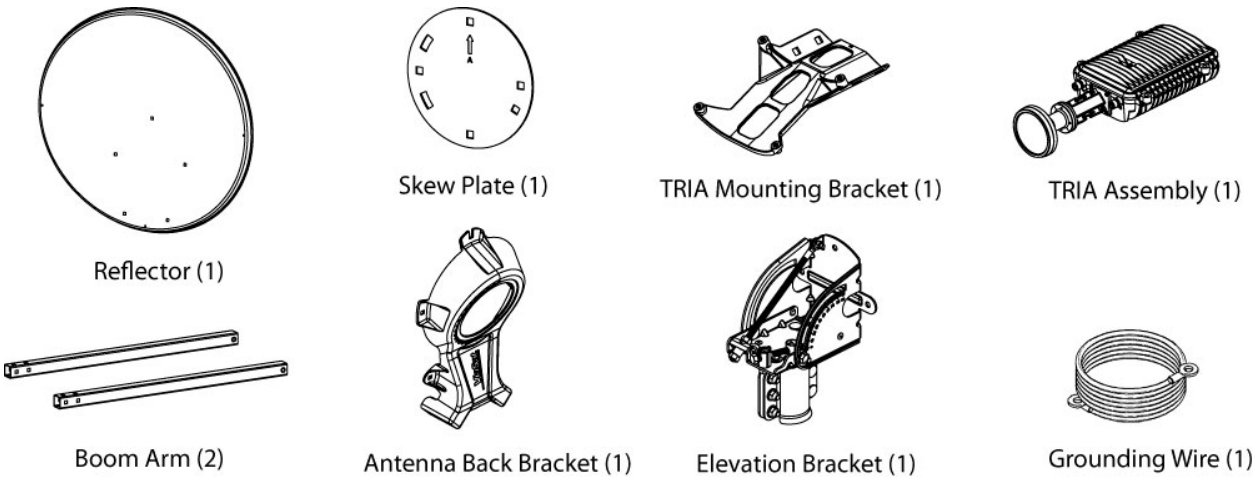


Figure 3-1. Hardware Included with Top Pole ODU.

Step 2: Fasten Antenna Back Bracket to Elevation Plate

Construct the Elevation, Azimuth, and Skew Adjustment Assembly by fastening the Skew Plate to the front of the Elevation Bracket, through the Antenna Back Bracket.

Ensure that you align the A arrows. Pass four M8 x 20mm Carriage Bolts through the skew plate, then the Antenna Back Bracket, and, finally, through the front of the Elevation Bracket. Secure the Skew Plate using a M8 Washer, M8 Spring Washer, and a M8 Hex Nut on each Carriage Bolt, as in Figure 3-2.

Set the skew to 90 degrees, as shown in Figure 3-3. Tighten hardware with a 13mm (or 1/2") wrench.

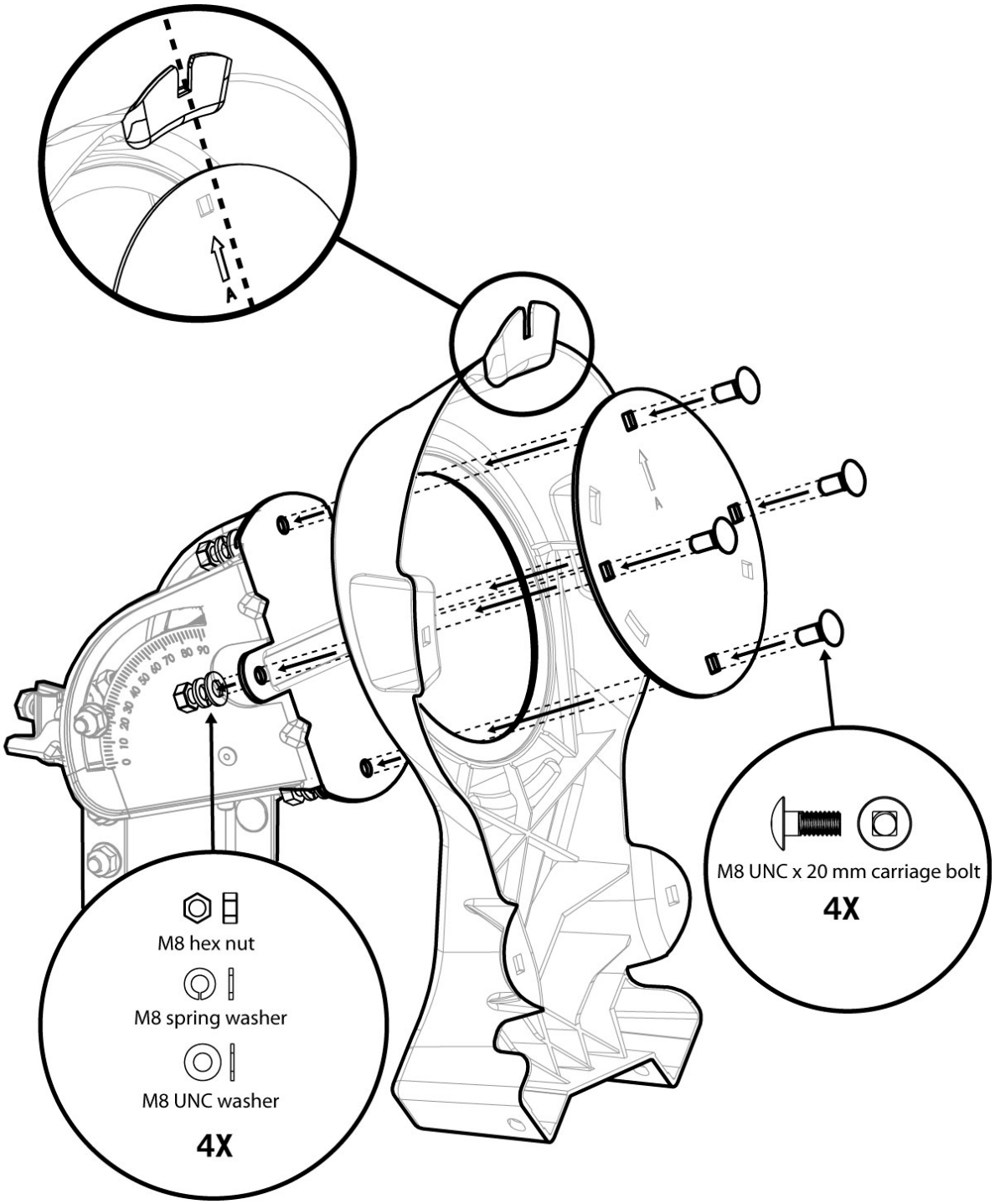


Figure 3-2. Elevation Bracket Assembly.

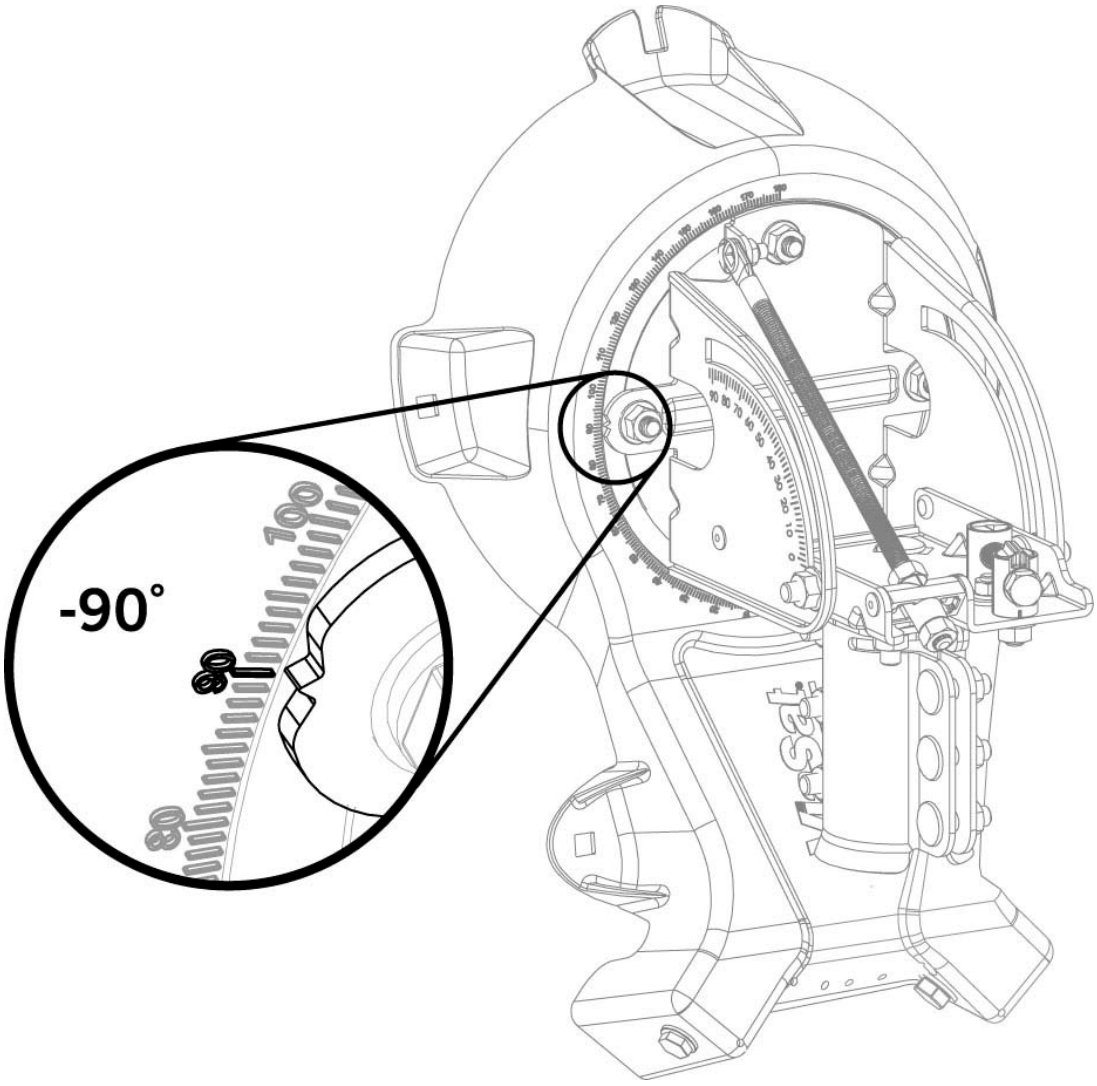


Figure 3-3. Setting the Skew.

Step 3: Boom Arm & TRIA Support Bracket Installation

Assemble the boom arms and TRIA support bracket as shown in Figure 3-4.

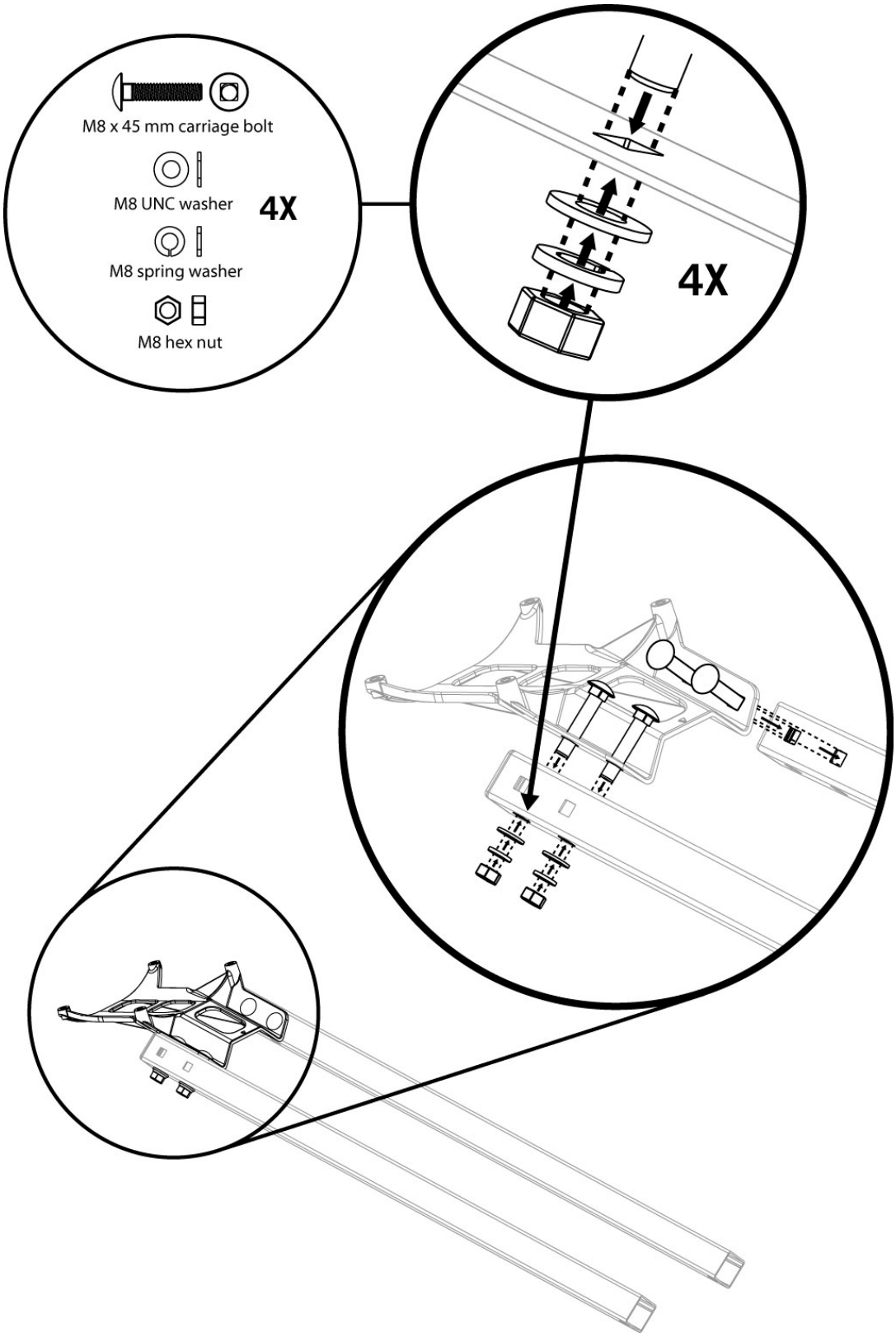


Figure 3-4. Assembly of Boom Arms.

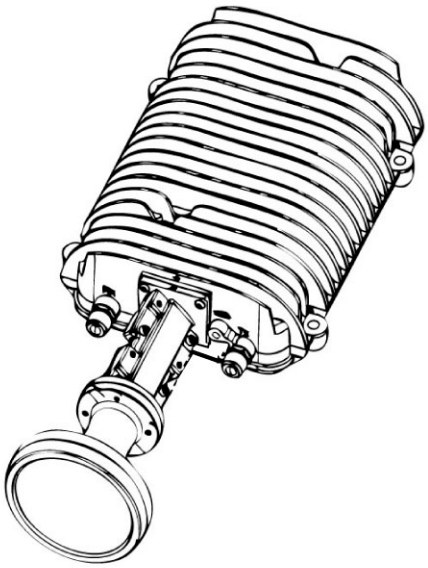


Figure 3-5. The TRIA Assembly.

Step 4: TRIA Installation

Start by removing the TRIA and the mounting hardware kit from its box.

The TRIA assembly is shown in Figure 3-5.

Position the TRIA onto the four mounting posts on the TRIA mounting bracket (Figure 3-6).

Note: The TRIA is positioned on the incorrect side if the TRIA cooling fins come into contact with the TRIA Mounting Bracket.

Insert the four M5 Pozi-Pan Screws and M5 Spring Washers (included with the TRIA, not the ODU fasteners) into the TRIA mounting holes and thread into the TRIA Mounting Bracket (Figure XX). Tighten each screw using a number 2 Pozi-drive or Phillips screw driver.

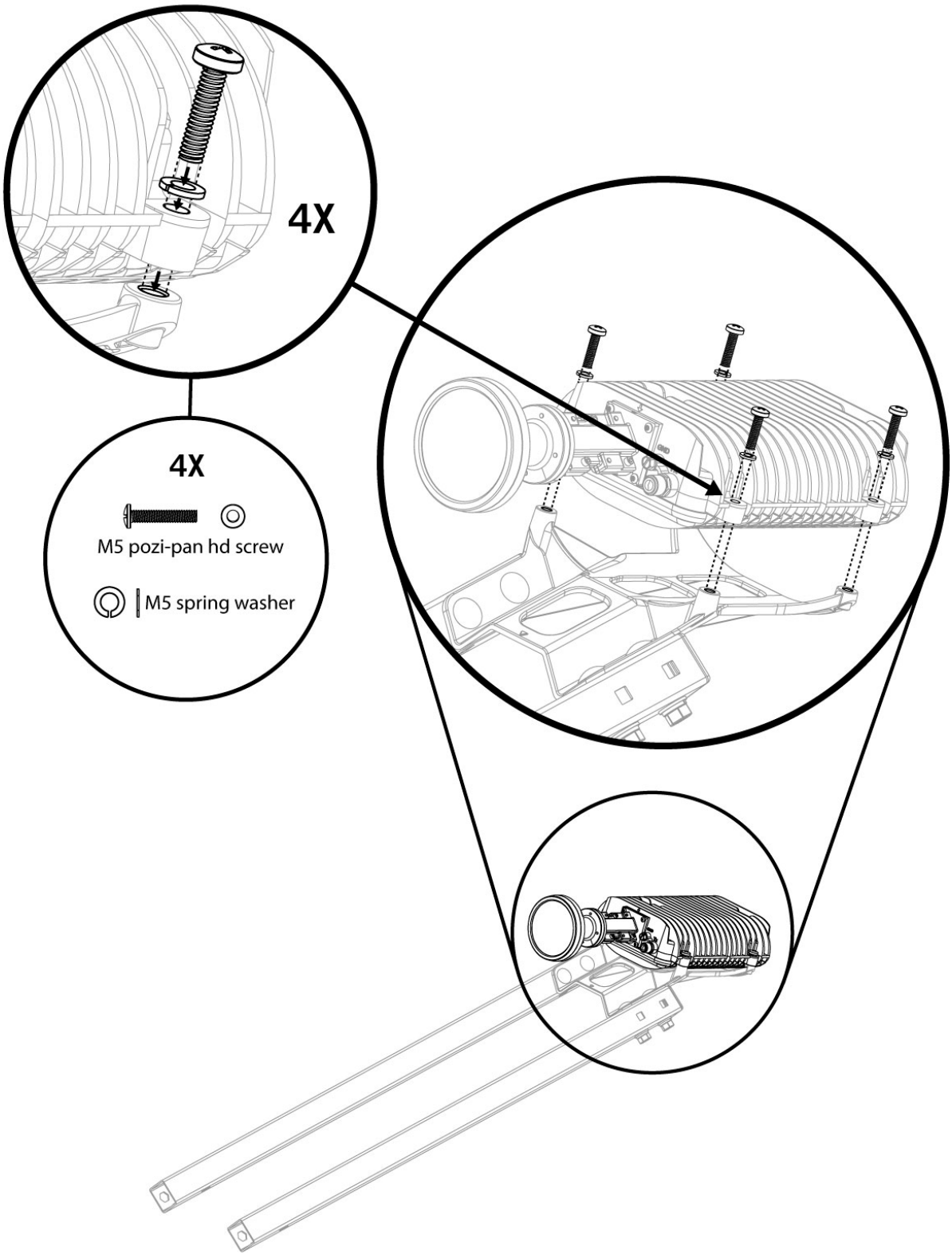


Figure 3-6. Mounting of TRIA to Support Bracket.

Now run the ground wire from the TRIA connection marked GND to the ground lug (Figure 3-7) on the Elevation Plate (Figure XX) along the boom arm. Wrap the ground wire and boom arm with UV resistant cable ties.

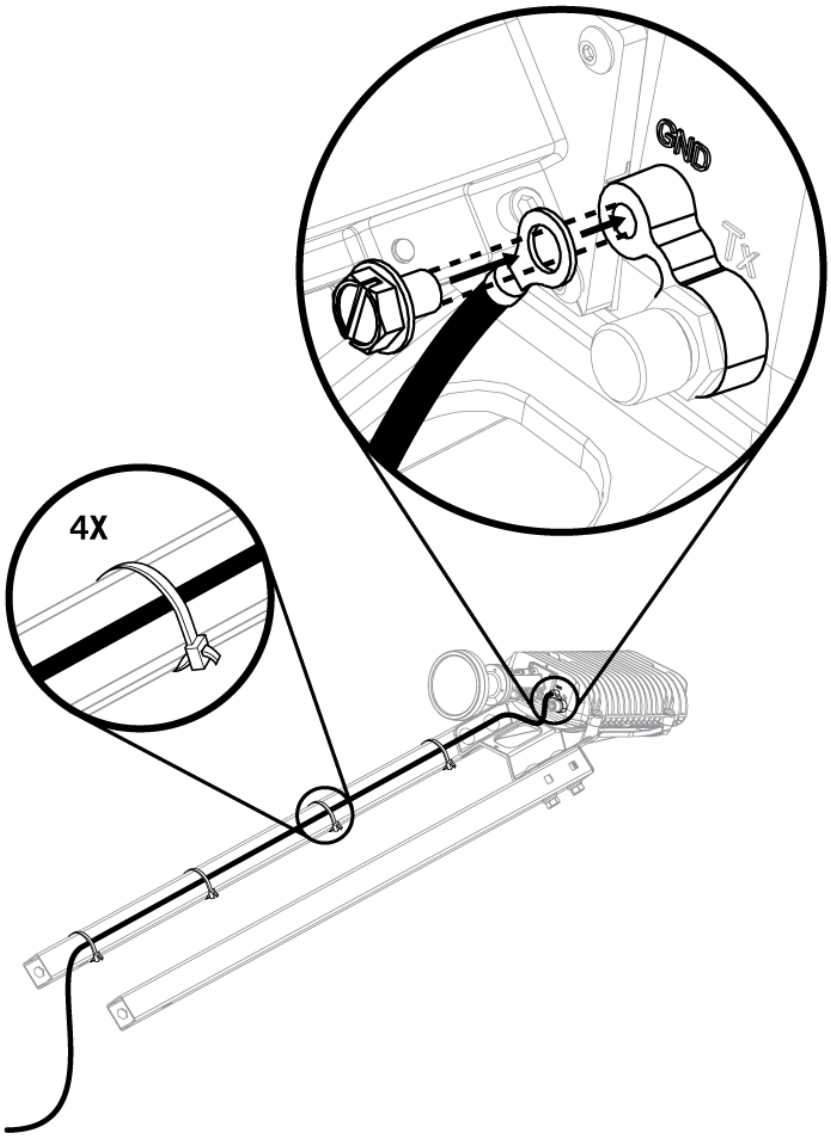


Figure 3-7. Attaching Ground Wire to TRIA.

Step 5: Pole Clamp Hardware Installation

The ODU sits on top of a pole (or tri mast). Loosen the six bolts on the clamping bracket until the bracket just fits onto the pole. Tighten until the bracket is firm, but loose enough that the ODU assembly can still be turned to accomplish the initial pointing to the satellite (Figure 3-8). Use the compass heading provided on the work order. Once fine pointing is finished, carefully tighten the nuts until the bracket is seated firmly on the pole so that the bracket will not move if a strong wind hits the antenna dish.

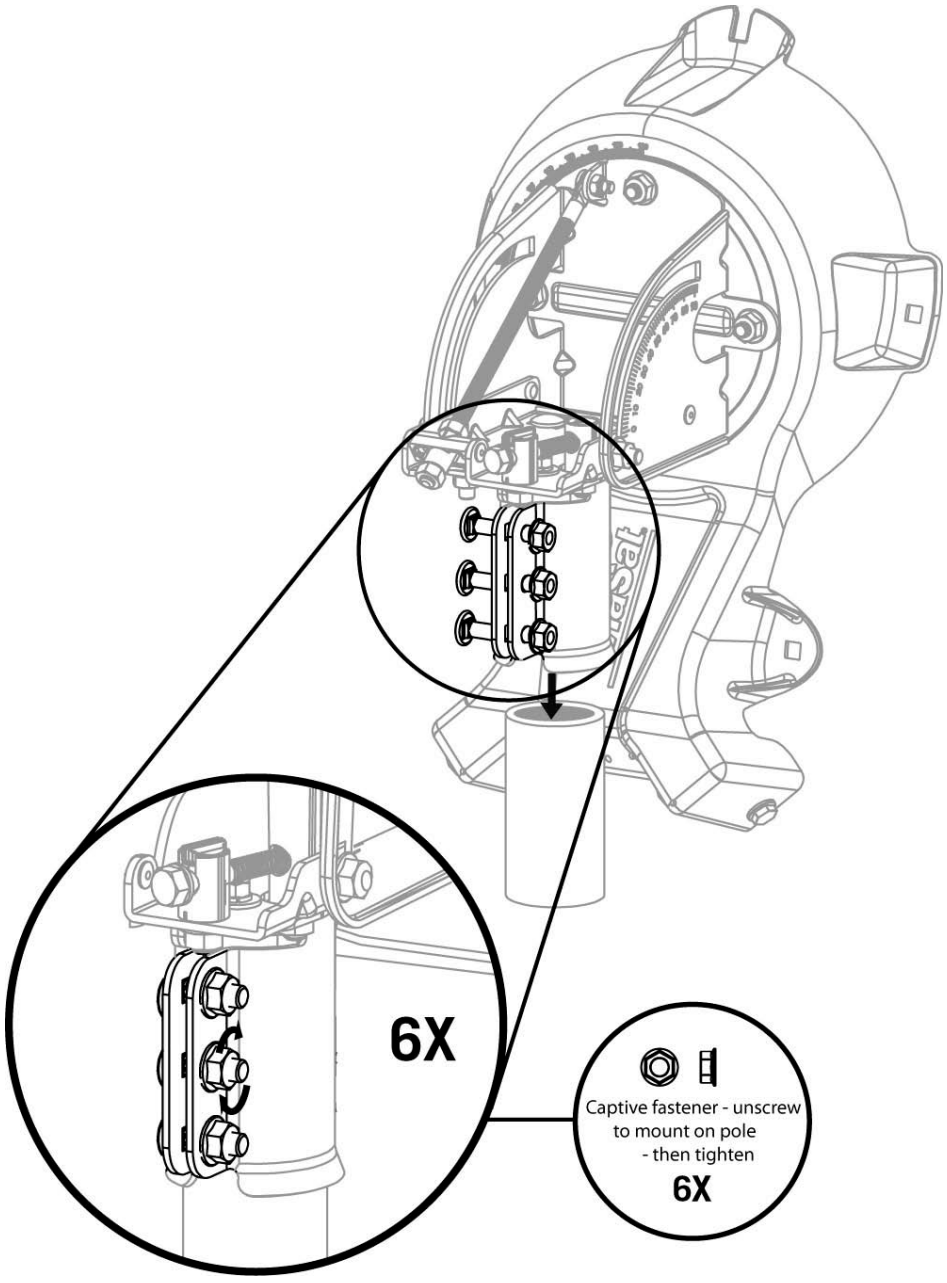


Figure 3-8. Mounting Elevation Bracket to Pole.

Step 7: Attaching the Boom Arms

Slide the Boom Arms into the slots at the bottom of the Antenna Back Bracket, aligning the screw holes. To fasten the Boom arm to the Antenna Back Bracket, insert one M8 x 20mm Hex Head Bolt through one M8 Washer and into each of the four screw holes in the slot and tighten with a 13mm (or 1/2") wrench (Figure 3-9).

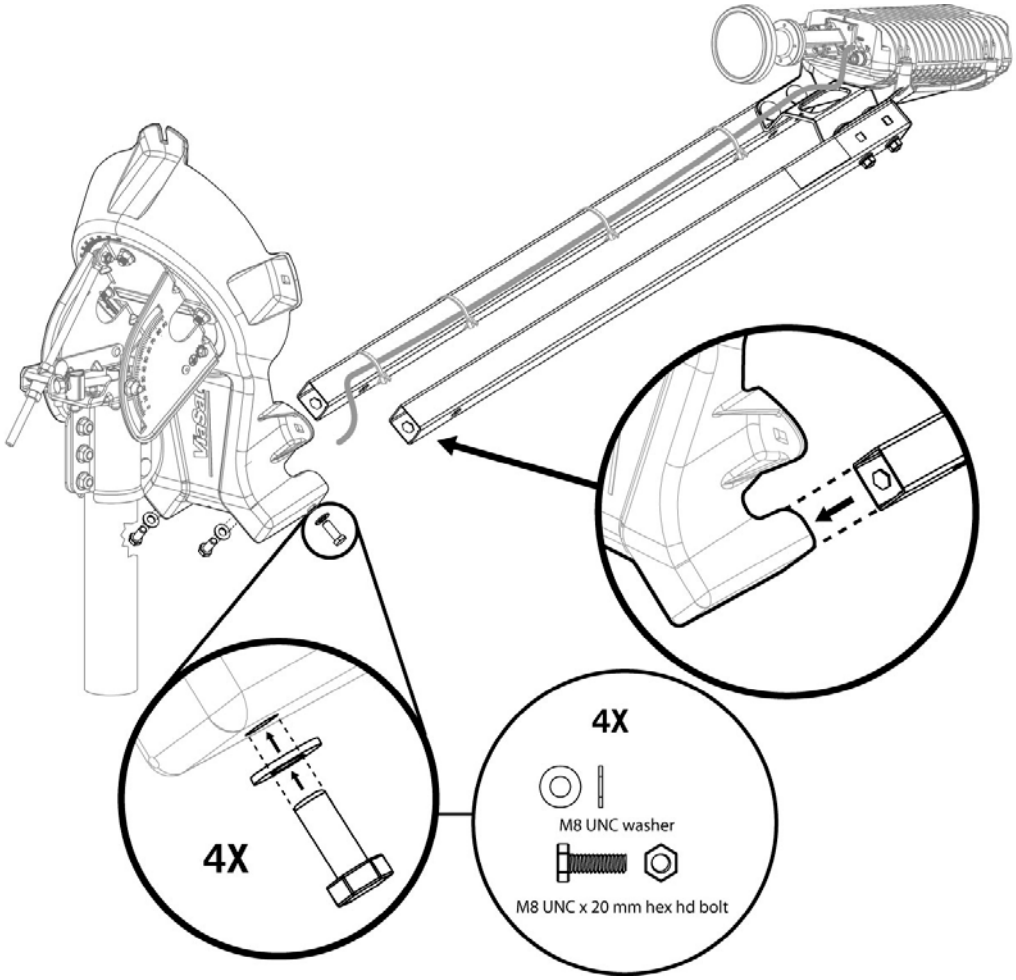


Figure 3-9. Mounting the Boom Arms.

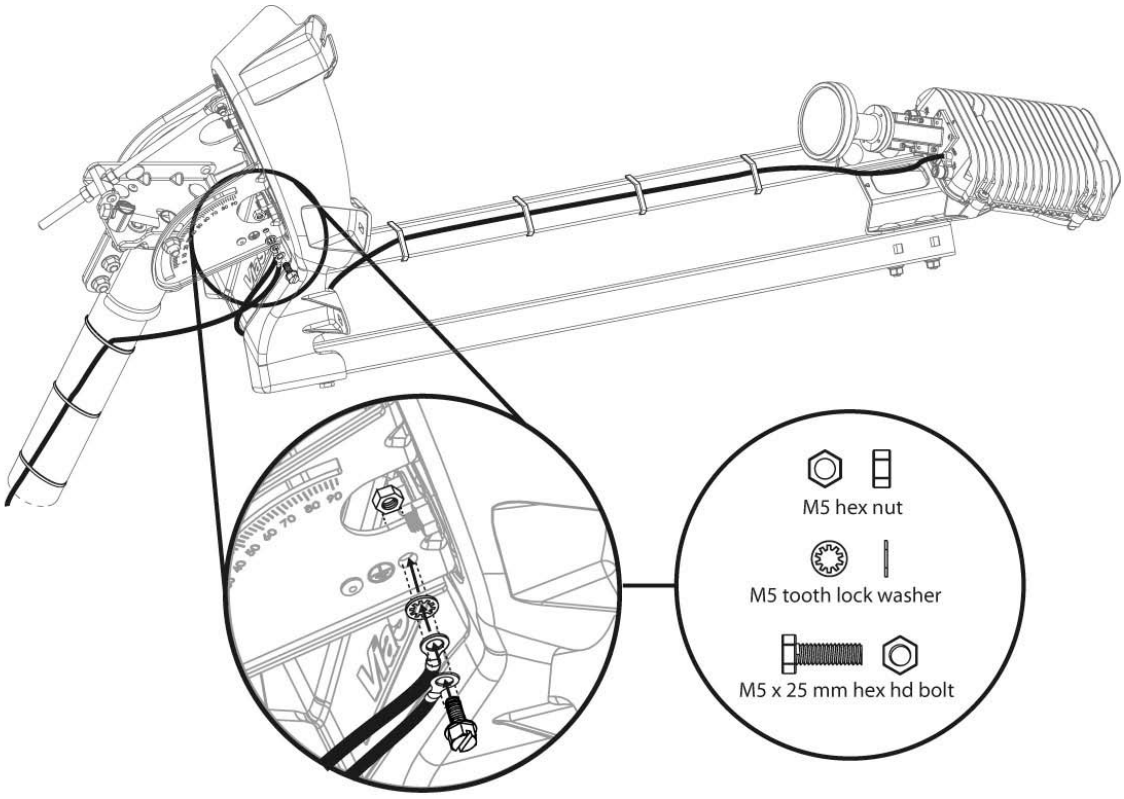


Figure 3-10. Attaching the Ground Wire to Boom Arm and Elevation Bracket.

Now attach the TRIA ground wire and the earth ground wire to the elevation bracket lug, as shown in Figure 3-10. Use cable ties to secure the earth ground wire to the pole.

Step 8: Elliptical Dish Installation

Fasten the Elliptical Dish to Antenna Back Bracket using five M8 x 20mm Carriage Bolts inserted through the front of the Dish and through the five tabs located on the rim of the Antenna Back Bracket.

First, support the dish using a M8 x 20mm carriage bolt that has been fastened in the upper hole of the dish (Figure 3-11). Let the slot in the antenna back bracket support the weight of the dish. Then insert the rest of the carriage bolts and secure them with serrated nuts.

Make sure that the square shoulders on the carriage bolts are seated in the square holes in the Dish. Secure the Dish to the Antenna Back Bracket using a M8 Serrated Flange Nut on each carriage bolt and tighten with a 13mm (or 1/2") wrench.

***Note**: Depending on installation situation, the receiver dish might be attached prior to mounting on pole.*

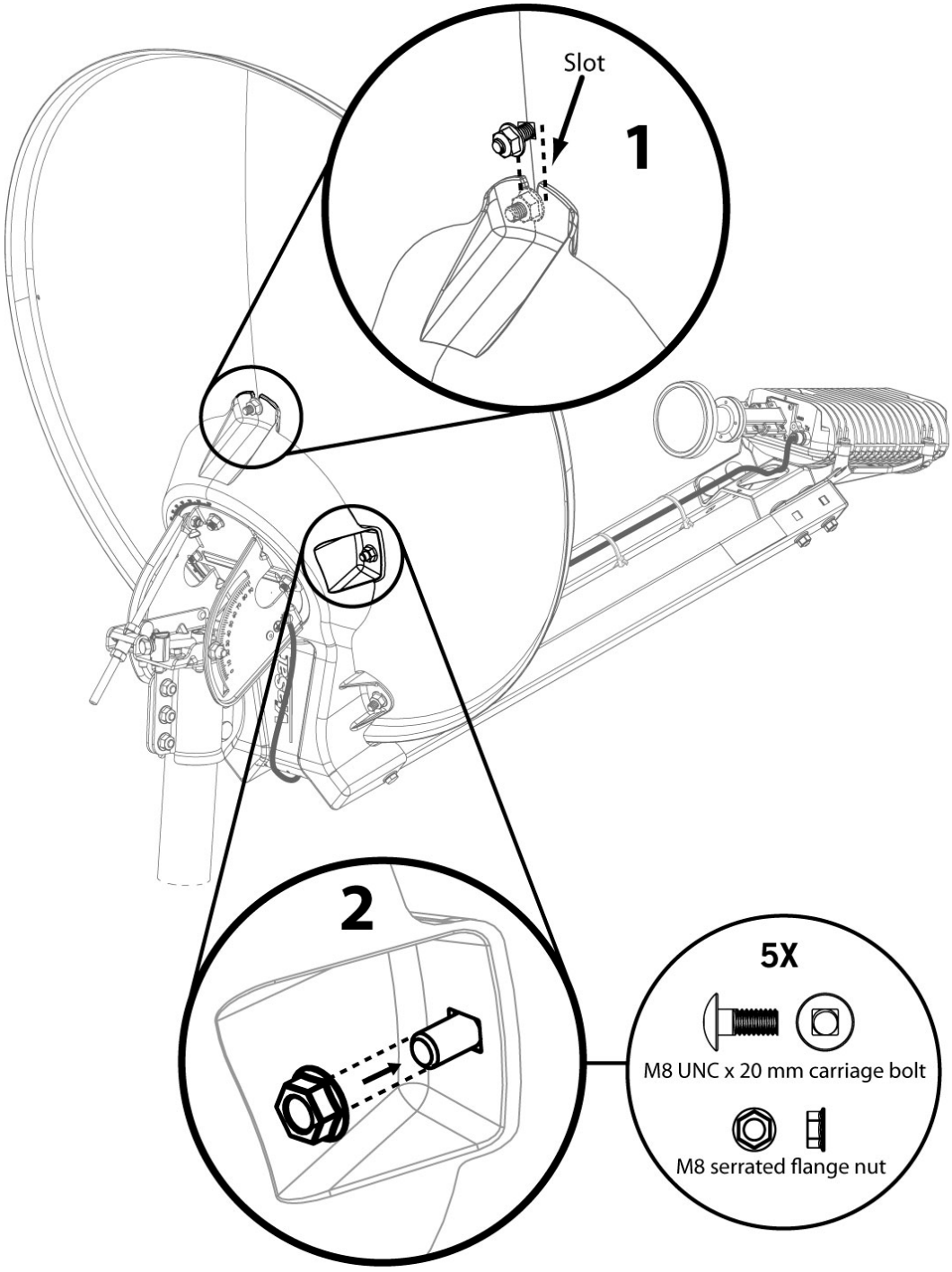


Figure 3-11. Mounting the Receiver Dish.

4 MOUNTING THE ANTENNA ON A TRI MAST

After the assembly is complete, use the following steps to mount the antenna to the predetermined location. The mount must be attached to a structural member, i.e. solid wall or wall studding.

Caution Do not attempt to mount the tri mast on slate, Spanish tile, or shake shingle roof materials. When mounting on a brick wall or chimney, drill the mounting hole into brick, not the mortar joints. Do not install over a living area, the preferred location is over the eves of a roof.

Wall Mount Example

Step 1: Locate the wall stud in the area of installation. Align the holes of the Mounting Bracket with the structural member. Mark the upper hole in the center of the bracket with a pencil and drill a 3.175 mm (1/8") hole.

Attach the Mounting Bracket to the wall with a 6.35 mm x 76.2 mm (1/4" X 3") lag screw and washer, but do not tighten. Use a Spirit Level to ensure that the bracket is horizontally and vertically level.

Drill a 3.175 mm (1/8") hole for the bottom hole in the center of the bracket and insert a 6.35 mm x 76.2 mm (1/4" X 3") lag screw and washer. Tighten both lag screws.

Drill a 3.175 mm (1/8") hole in each of the holes in the Mounting Bracket base. Insert and tighten a 7.94 mm x 38.1 mm (5/16" X 1 1/2") lag screw and washer in each corner hole (Figure 4-1).

Note: Fill all holes with weather-grade silicon sealer before inserting bolts or screws.

Note: *The lag screws and washers are not included in the Tri Mast package.*

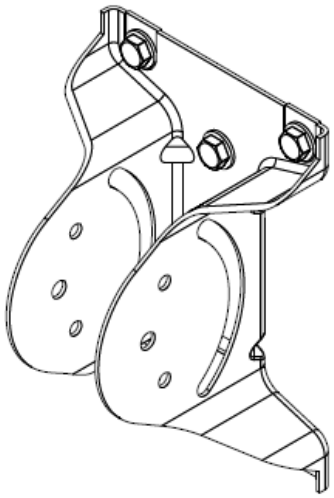


Figure 4-1. Tri Mast Mounting Bracket.

Step 2: To attach the Mount Tube to the Mount Bracket, align the bottom hole at the base of the Mount Tube to the arched slot at the bottom of the Mount Bracket right side flange.

Insert a 7.94 mm x 19.05 mm (5/16” X 3/4") UNC Carriage Bolt through the right flange and wall of the Mount Tube. Secure the Carriage Bolt using a 7.94 mm (5/16”) UNC Serrated Flange Nut inside the Mount Tube.

Repeat this procedure to attach the Mount Bracket left flange to the bottom hole at the base of the Mount Tube.

Next, swing the Mount Tube up to align the top hole at the base of the Mount Tube with the center hole in the side flange of the Mount Bracket. Pass a 7.94 mm x 63.5 mm (5/16” X 2 1/2") UNC Hex Head Tap Bolt through the hole in the right side flange, the Mount Tube, and the left side flange and secure using a 7.94 mm (5/16”) UNC Serrated Flange Nut (Figure 4-2).

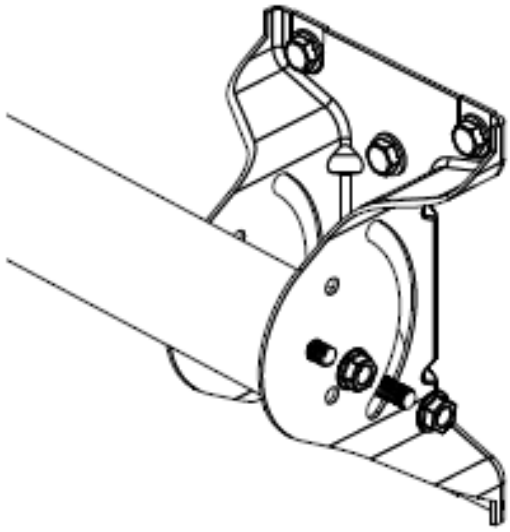


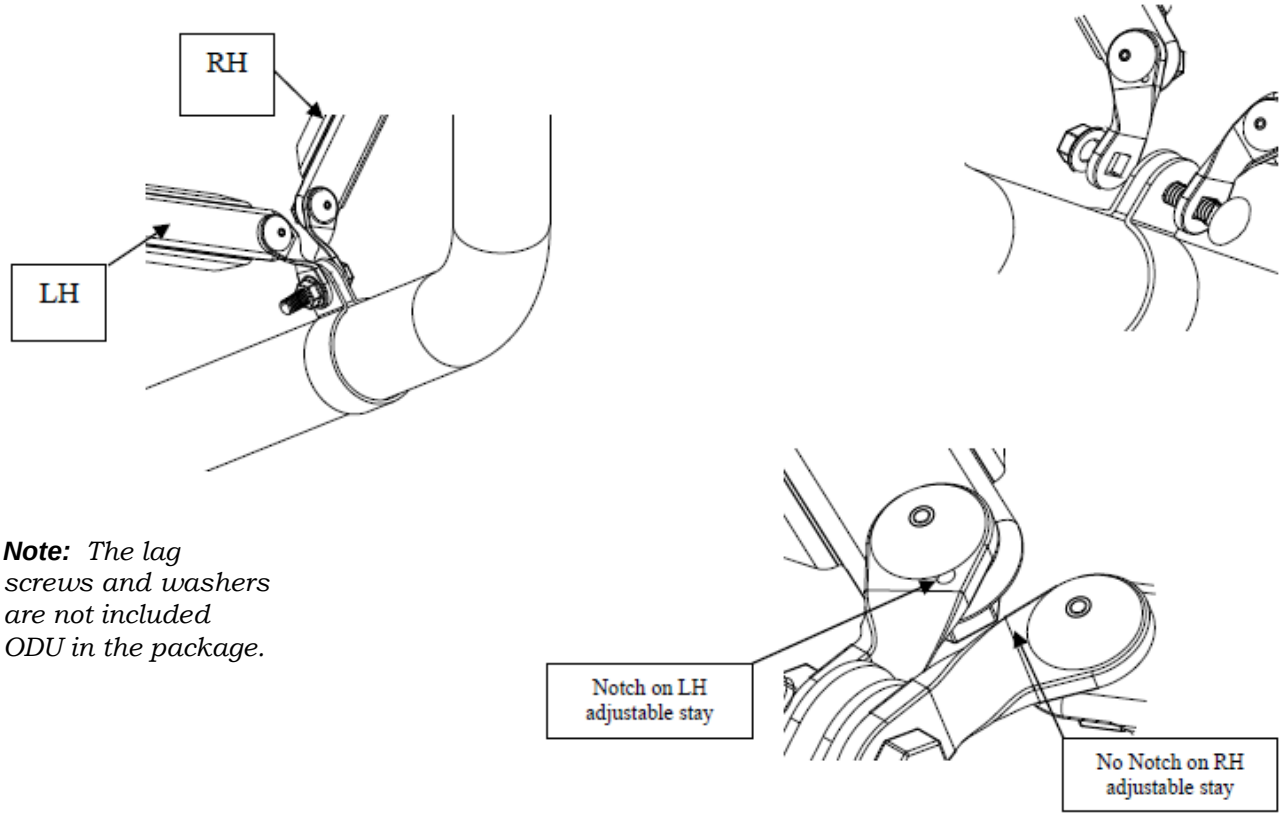
Figure 4-2. Assembling the Mount Tube to the Mount Bracket.

Step 3: Remove the Adjustable Tri Mast Stays from the package and loosen all of the 7.94 mm (5/16”) UNC joint hardware. Caution edges may be sharp; gloves are recommended.

Position the Tube Collar just below the bend in the Mount Tube (Figure 4-3). Attach the adjustable stays to the collar as demonstrated in (Figure 4-3).

The adjustable Stays should be assembled so that the notch is visible on the left hand side of the assembly. Place an adjustable Stay on each side of the Tube Collar flanges and align the holes.

Pass a 7.94 mm x 38.1 mm (5/16” x 1.5”) UNC Carriage Bolt through the hole on the adjustable Stay on the right, both Tube Collar flange holes, and the hole in the adjustable Stay on the left. Secure with a 7.94 mm (5/16”) UNC Serrated Flange Nut, as in (Figure 4-3) and tighten using a 12.7 mm (½”) socket wrench.



Note: *The lag screws and washers are not included ODU in the package.*

Figure 4-3. Attaching the Stays to the Mount Tube.

Use a Spirit Level to verify the horizontal and vertical level of the Mount Tube above the vertical bend. Mark the holes at the bottom of the Stays and drill a 1/8” for each. Use a 7.94 mm x 38.1 mm (5/16” x 1 1/2”) lag screw and washer to attach each Stay to the wall. Do this procedure for both horizontal and vertical mounts.

Position the adjustable Stays at an angle of 60º - 65º from the tube as shown in (Figure 4-4) and attach each Tri Mast Mount Plate to the building support structure using two fasteners per plate (Fasteners not supplied). Fasteners must be attached to a structural member.

Tighten all the 7.94 mm (5/16”) UNC joints.

Attention: For vertical wall mounts, fill all holes with weather-grade silicon sealer before inserting bolts or screws. For sloped roof mounts, fill all holes with the appropriate asphalt-based, synthetic-rubber, or acrylic co-polymer roof sealant (Figure 4-4).

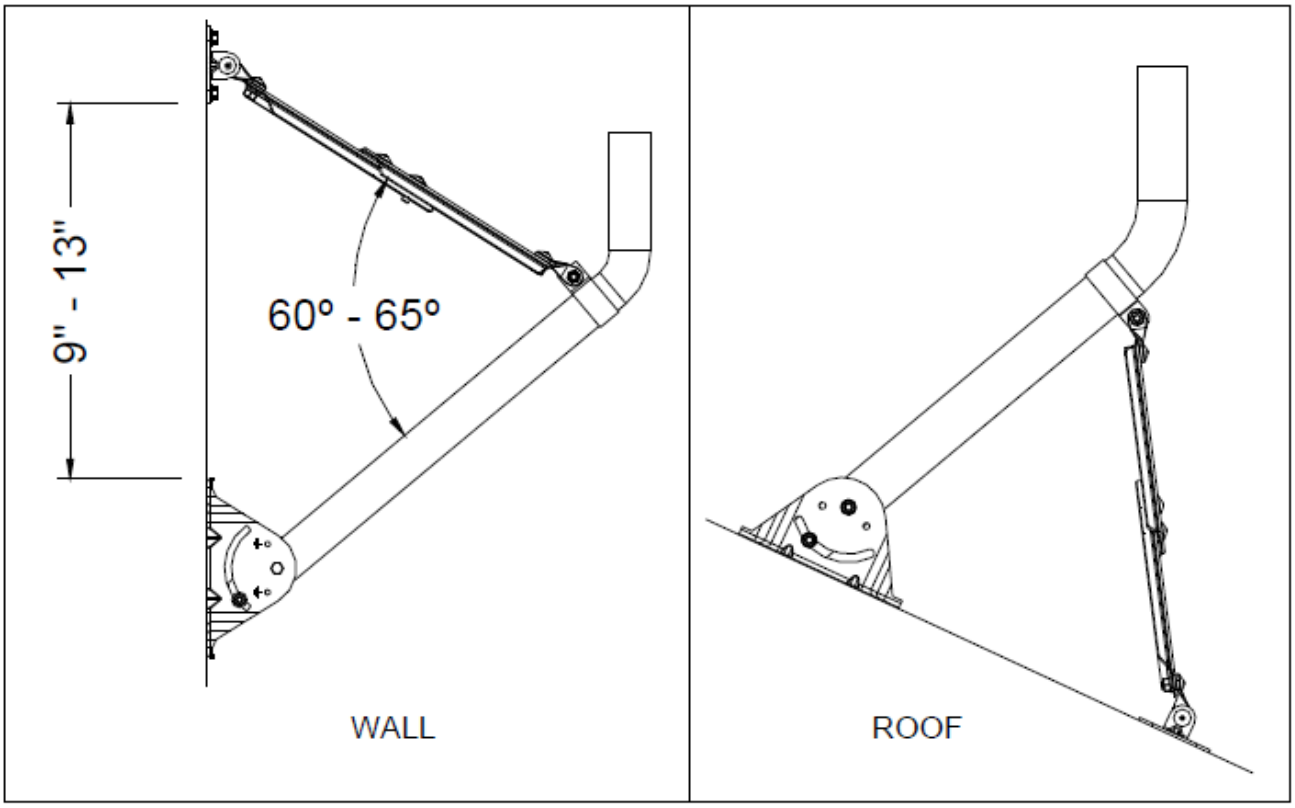


Figure 4-4. Wall and Roof Mounting Options.

Step 4: Taking heed of the safety instructions mentioned at the start of this instruction manual, carry the Antenna assembly to the Mount Tube location.

Loose the 6 nuts on the flange of the mounting bracket and slide it onto the top of the Mount Tube (Figure 4-5).

Secure in place, then hand-tighten the Flange Nuts.

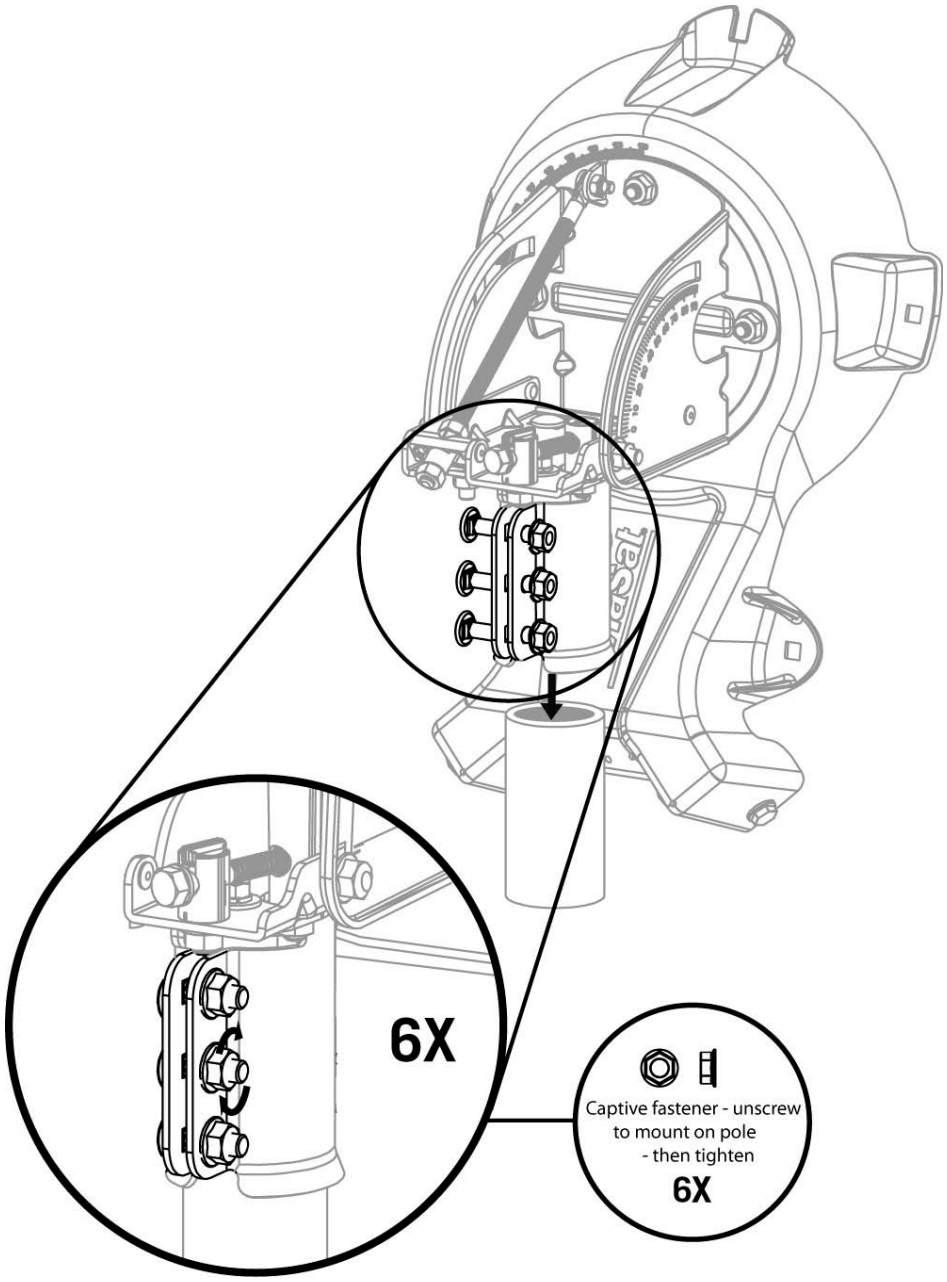


Figure 4-5. Sliding Mounting Bracket Canister onto Pole or Mast.

5 RECOMMENDED CABLING AND GROUNDING

Connect the Transmit COAX RG6 Cable to the left connector on the TRIA, labeled “TX”. Connect the Receive COAX RG6 Cable to the right connector on the TRIA, labeled “RX” (Figure 5-1).

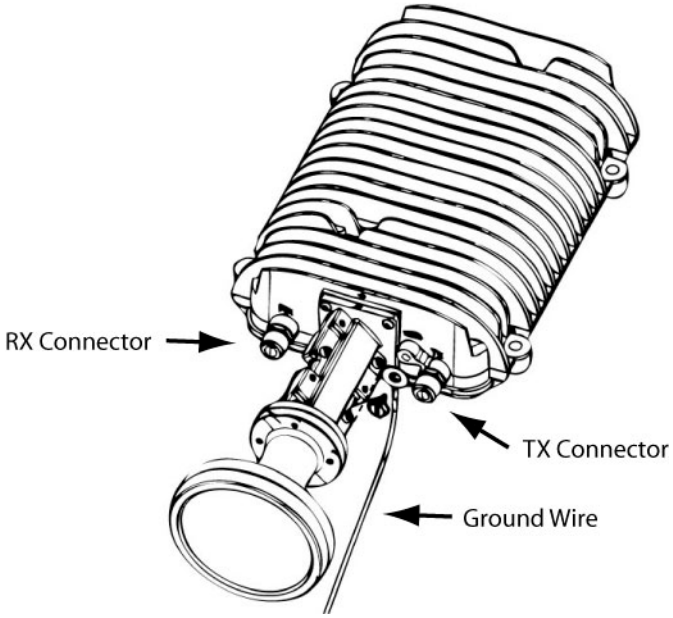


Figure 5-1. TRIA Connections

After attaching the COAX RG6 Cabling to the TRIA RX and TX connectors, using cable-ties, attach the TX and RX Cables together every 18 inches to the boom arm. Next attach the cables to the Mount Tube right below the vertical bend with a large cable-tie. Run the cables down the Mount Tube to the Mount Bracket maintaining a straight line and attaching them to the Bracket every 18-24 inches with large cable-ties.

The National Electric Code (NEC) and local code require grounding the Antenna. Grounding also protects system components against static voltage build up and electrical surges.

Attach a #10 copper wire to the ground lug on the TRIA and ground the other end to the Antenna structure. An approved 2.2 6Hz dual grounding block is also required.

Note: The ODU package does not provide the grounding block.

For information on installation and configuration of the SurfBeam 2 Satellite Modem Indoor Unit (IDU) refer to the SurfBeam 2 Satellite Modem Indoor Unit (IDU) Installation and Setup Guide, 1104467-001.

6 SUMMARY OF ODU MOUNTING OPTIONS

6.1 Mid-Pole Mounting Configurations

The ODU can be installed using a mid-pole mount (Figure 6-1) or a pole mount with optional wall or roof mounting hardware (Figure 6-2). The mid-pole configuration is designed to mount to a pre-existing pole. The universal mounting kit remains packaged separately as an optional mounting kit.

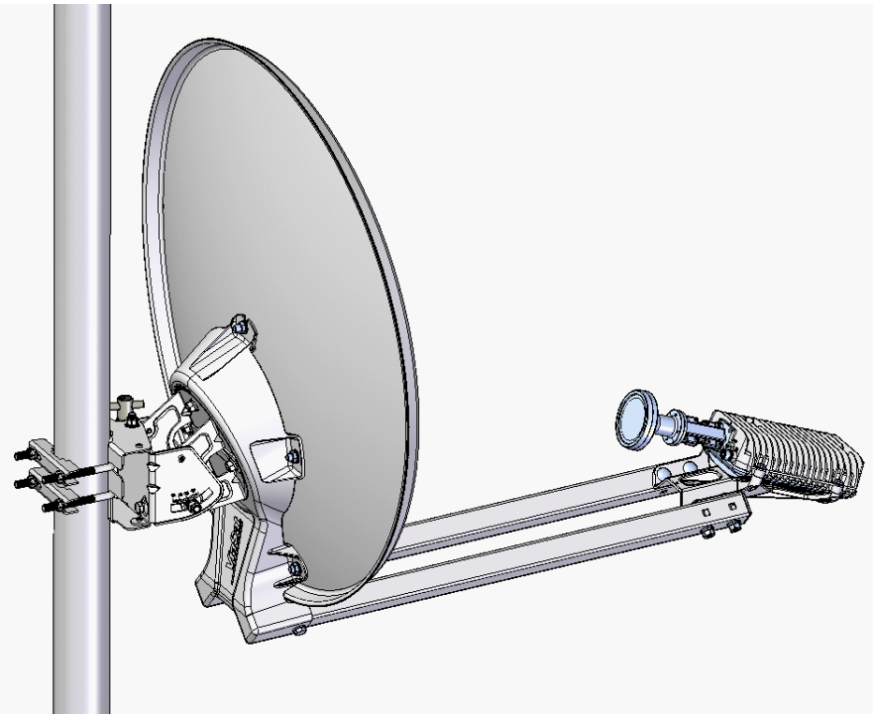


Figure 6-1. ODU Installed on Mid-Pole Mount.

The top-pole mounting (Figure 6-4) is intended to mount on a pole that is either cemented into the ground or mounted to the wall or roof of a building. The reflector, boom arms, TRIA, antenna back bracket and skew plate are identical for both ODU configurations. The Azimuth/Elevation Head configuration and mounting brackets are different for the two configurations.

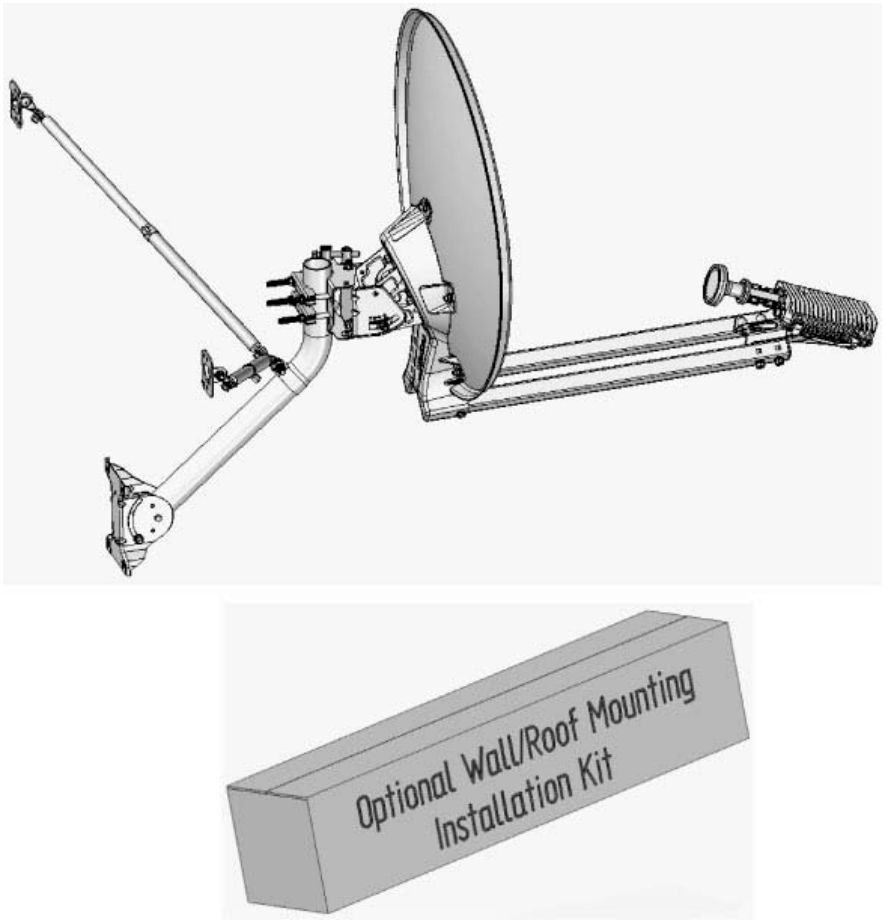


Figure 6-2. ODU Mid Pole Mount with Optional Wall or Roof Mounting Hardware.

6.2 Universal Mounting Configurations

The ODU can be installed using a universal mount suitable for wall or roof locations (Figure 6-3), or installed using a universal top mount on a pole (Figure 6-4).

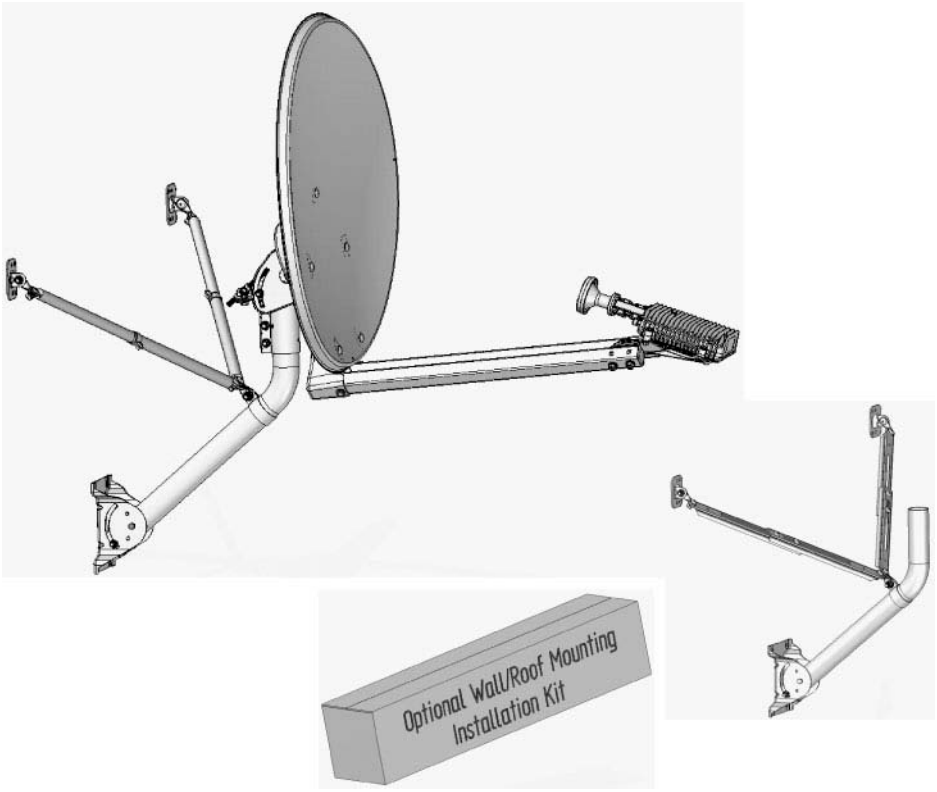


Figure 6-3. ODU Universal Mount with Optional Wall and Roof Mounting Hardware.

6.3 Top Pole Mounting Configurations

The ODU can also be installed as a top mount on a pole configuration.

Note: The mounting pole must be securely fixed so that it does not move; if secured in the ground, use at least 120 lbs (55 kg) of concrete to stabilize the pole.

Figure 6-4. ODU Top Mount on Pole.

An optional pole mount adapter is available for mounting the system to a galvanized schedule 40 2-3/8” O.D. pole (Figure 6-5).

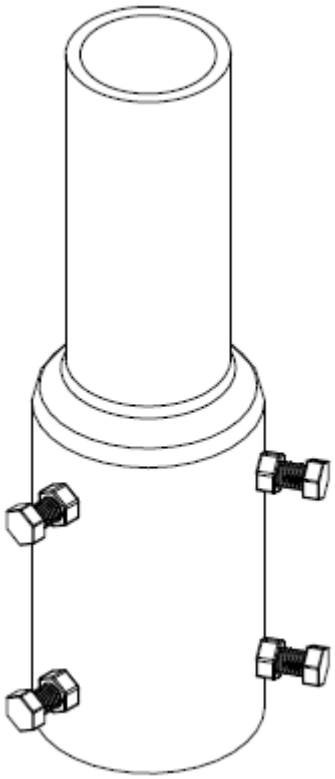


Figure 6-5. Optional Pole Mount Adaptor.